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Vol 4 No 15

MICROS IN MOVIES FEATURE ISSUE

Software houses go for Amstrad's 664

SOFTWARE houses are already planning software support for the new Amstrad 664 disc-based micro, due to be launched next week

Virgin is planning an enlarged and enhanced version of its acclaimed program *Sorcery* on disc as soon as possible

'Once we've got some machines to work on, we'll start,' said Nick Alexander of Virgin "*Sorcery* on disc could obviously be much bigger, with more rooms and we'd like to enhance the graphics as well"

Micromega and Micropower are also planning disc games for the new machine after its launch this month and Level 9 intends to convert its Amstrad adventure range at around £15 per disc

The Amstrad 664's specification, with the built-in disc drive and CP/M and Digital Research's Logo bundled with it, will make it the first in its field at a home market price Versions will be available bundled with either a

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Atari trims XEs

WITH Atari poised to launch its new ST and XE micro ranges at the Hannover Fair next week, it is still not clear which machines will eventually appear

It seems likely that Atari may now shelve its range of 64K 8-bit micros altogether

The priority models are the 128K 130XE 8-bit and the ST 16-bit machines which will become available here and in Europe at almost the same time as in the US in May

"We have brought the 130XE forward," said Atari UK's managing director Simon Westbrook There will be a few machines available in the UK immediately around that time to distribute though thinly at first."

Launch schedules for the other 8-bit XE models are, however, far from clear

Originally Atari announced it would produce four XE models 130XE (128K) 65XE (64K), 65XEM (music version of 65XE) and 65XEP (portable version of the 65XE)

The 65XEP portable has already been shelved (see *Popular Computing Weekly*, March 28th)

Now the 65XEM music machine', an XE with a MIDI interface will not be at Hannover, and there is some doubt that it will ever appear "It is

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THE THAMES Television and DK'Tronics game *Minder*, based on the perenially popular TV series will be available by the end of the month

The program, currently for the Spectrum costs £9 95 and it will be followed by versions for the Amstrad, MSX, Memotech and Commodore 64

Micros in the Movies: Minder is reviewed on p14 and its creator is profiled on p39

INSIDE ❯ GAMES TURN INTO INTERACTIVE MOVIES – SEE PAGE 20 ❯


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POPULAR Computing WEEKLY
Vol 4 No 15

View

Curiously, both the Amstrad 664 and Atari ST are to be officially launched next week, almost on the same day.

Amstrad's machine is a natural development from its successful CPC 464 micro. It has a beefed-up Basic and a built-in disc drive, uses the same 8-bit chip and is 464 software compatible.

Atari on the other hand has chosen a more radical approach – a 32/16-bit micro with all the trappings of upmarket machines from fashionable companies like Apple – mice, windows and icons.

Despite the fact that the Atari is a more expensive system than the Amstrad – by the time you've bought a disc drive and monitor it'll cost over £700 – its low entry price of £399 ensures that two machines will compete directly.

The advantage of the Amstrad system is that with CP/M it immediately has access to a huge library of albeit rather outdated software. It uses established technology, and it is likely to be in the British shops in volume well before the Atari. Disadvantages may be the high price for disc software (although Amstrad is hedging its bets by including a cassette interface, Sinclair take note) and a potential conflict with the existing 464.

The Atari ST is an altogether braver – and riskier – offering. The danger is that it will suffer the kind of software and hardware snags that have dogged the QL.

Of the two machines, the Atari ST, despite its uncertainties, must be the winner, though. Micro computing is above all a hobby and one in which the new-fangled sports model will always be more attractive than the dependable saloon.

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Computer Trade Association Magazine of the Year

Sinclair heads UK in new survey

A NEW survey of the home micro market confirms Sinclair as the market leader fo the UK

The study, by AGB Cable and Viewdata, gives Sinclair a market share of 36% between October and December 1984 This is down however from 45% a year earlier

Commodore, the survey claims, has a share of 27%, while Amstrad's CPC 464 has captured 8% Acorn's share has increased from 8% in the last three months of 1983, to 22% a year later.

AGB Cable and Viewdata's study also claims that the market continued to grow very fast in 1984, but looks like slowing considerably this year.

Out of all homes with computers, 43% bought their micros over the last twelve months, one in five during the Christmas period. But only 7% of non-computer owning households expressed a strong interest in buying one

More than 65% of those questioned said they felt the computer's main application was for playing games

Atari trims its XE series

◄ continued from page 1

possible there is no music micro to come out at all," Simon continued. "It's a case

Atari's 65XE

of Atari reserving the right to upgrade and adjust products, if you like, and the ST has a MIDI interface anyway"

Atari claims to be planning a 16-bit portable to fill the gap left by the 65XEP 'While the idea of an 8-bit portable seemed excellent in January, the 16-bit looks a better bet now With chip prices tumbling and needs becoming more sophisticated we reckon 130K and 16-bit will become the norm, and we don't need to be messing around with 64K in music machines and portables," said Simon

"At CES, in January, however, the difference in cost between a 64K and 130K was far more substantial"

In the US, Atari is hoping to see both the XE and ST series

The 130ST – top priority

in the shops by the end of this month While the XE could beat that over here, albeit in restricted numbers, the ST models are not expected until May or June

To Russia with love

REPRESENTATIVES from Sinclair and Memotech have both revisited Russia to hold further talks on the sale of micros into Russian schools (see *Popular Computing Weekly*, February 14)

Acorn, Sinclair and Memotech all made a good impression on the Russians when they exhibited at Technobuch, a Moscow micro show at the end of January

Sinclair is believed to have teamed up with ICL who will be going to Russia to negotiate on its behalf this month

The Memotech consortium, which includes representatives from the company's distributors, Spectrum Group, also made a ten-day visit last month, and succeeded in selling £20,000 worth of Memotech MTX 512 machines to the State Committee for Professional and Technical Education

The Russian education market is potentially huge – the Soviets eventually plan to equip between 60,000 and 70,000 educational establishments with around 20 micros each

Companies go for 664

◄ continued from page 1

monochrome or colour monitor which are expected to sell in the £350 to £500 price band.

The 664 and 464 (the existing model with built-in cassette recorder) will be upwardly compatible only Improvements to Locomotive's Basic apparently mean that 664 programs will not necessarily run on a 464, although the basic code remains the same

Amstrad will be pushing disc software for the 664 – likely to be priced around the £25 mark (see *Popular Computing Weekly* April 4) especially with its 'up-grade' from tape to disc scheme. An optional cassette recorder will almost certainly be offered for the 664, though. The machine has a din socket cassette interface at the back that would take a cassette recorder lead.

Strangeloop hits C64

VIRGIN has now converted its Spectrum game *Strangeloop* for the Commodore 64.

The conversion features some new puzzles to solve, and ten more rooms than its predecessor

Priced at £7 95, *Strangeloop* for the Commodore 64 should be available by mid-April

C5 production halted

PRODUCTION of the Sinclair C5 was halted briefly last week to allow a faulty part to be replaced.

Between two and three thousand vehicles were affected by the problem, which involved a plastic moulding on the gear box which was apparently not up to standard

Sinclair Vehicles stressed that the C5s involved had never left the factory at Merthyr Tydfyl, and that there was no question of any others being recalled

Up until the third week of February an estimated 5,000 C5s had been sold. No figures are available for sales since the 'electrically powered tricycle' moved from mail-order to retail sale

Firebird finally gets Elite

FIREBIRD has finally tied up its deal with Acornsoft to produce versions of *Elite* for the Commodore 64 and Z80-based micros

Firebird gained the Z80 rights from *Elite's* programmers Ian Bell and David Braben for the game itself last September in an auction, and later bought C64 rights

Now the company has signed the contract with Acornsoft that enables them to use Acornsoft's trademark *Elite* and the documentation which accompanied the original BBC and Electron versions of the game

Elite for the C64 will cost £14 95 (cassette) and £17 95 (disc) and should be available by mid-May. Spectrum and Amstrad versions (on both cassette and disc for the latter) are planned for late summer

'Hackers' appear in court

ROBERT SCHIFREEN and Stephen Gold, the two men arrested on computer disc forgery charges a fortnight ago (see *Popular Computing Weekly*, April 4), appeared at Bow Street Magistrates Court on April 3rd

Both were remanded on unconditional bail until a hearing on June 12th.

MIRRORSOFT

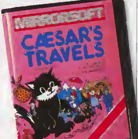
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–*Educational Computing*

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GREMLINS



Gremlins the Adventure, available early April on Spectrum, Commodore 64, C16, BBC and Electron.

Silicon celebrities

***Martin Croft** looks at the chequered career of computers in the movies*

Another year, another Oscar ceremony – and another slight to a minority group

Not one award went to a robot or an artificial intelligence, even though some of the year's best performances were by non-organic entities

It's hardly surprising, though – computers have been treated shabbily since films began, and robots haven't fared much better

Back in the 1920's, Fritz Lang's *Metropolis* involved a femme fatale leading men to evil ways. A lot later on, *Demon Seed* had a ludicrous plot resolving around a computer's lust for Julie Christie

Electric Dreams had a micro falling in love after having champagne spilled on its keyboard, and *Saturn 5* had Farrah Fawcett Majors being attacked by a robot

If robots aren't ripping puny humans limb from limb or in lustful pursuit of helpless women, then at the other extreme they're bowing and scraping to their human masters alongside Uncle Tom

Look at Robby the Robot in *Forbidden Planet* (at least he was allowed to keep some dignity on the silver screen – on TV's *Lost in Space* he was an absolute dummy) Or even C3PO and R2D2 – or the cute little robots in *Buck Rogers* or *The Black Hole*

About the only robot with a decent role in cinema history was Klaato in *The Day the Earth Stood Still* (which is what he did for most of the movie) Strong, silent, a robot of few words – none, in fact

Androids, robots in the guise of humans, get slightly better roles, which is obviously blatant bias towards their human appearance

Of course, it could be because the directors can use a human for most of the sequences involving androids. Some of the better human stand-ins include Rutger Hauer in *Bladerunner*, and Arnold Swarzennegger in *Terminator*.

But although androids tend to get stronger roles, they are usually evil through and through. The android in *Alien* is a case in point – not only vicious and sadistic, but prone to assaulting women with rolled up newspapers

If robots are mostly sex maniacs, computers are incipient megalomaniacs, always striving to take over the world. In *The Forbin Project*, a Russian and an American super-computer get together and start issuing orders to all and sundry. In *Wargames* a computer starts playing games with real nuclear missiles.

Of course, the best known example of a computer losing its mind is in *2001*

HAL murders four out of the five human crew members on the spaceship *Discovery*, apparently in a fit of pique at not being given command of the mission

Bowman, the lone survivor, cripples HAL by destroying his memory

Dark Star has an intelligent bomb which is fooled by humans using Cartesian logic – but it has the last laugh.

Quite why computers should wish to rule the world is never fully explained in any of the movies which feature power hungry mainframes, maybe it's just a cry for attention.

Compared to the treatment dished out to artifical intelligences by Hollywood, television is remarkably pro computers

Batman and Robin couldn't have fought the rather bizarre crime waves which affected Gotham City without the stalwart support of the Batcomputer. This wonder of 60s technology shot out its answers neatly typed onto a piece of biscuit shaped card.

Dr Who, of course, had the aid of his pet computer K9, who seemed capable of just about anything as long as he was kept away from lamp-posts

Of course, Dr Who did feature the Daleks, the Cybermen, the Yetis and the Shop Window Dummy Men, all villains of very large magnitude

But then, the Daleks and the Cybermen weren't computers or robots, but cyborgs, unholy marriages of flesh and circuitry. The Yetis did appear to be robots, but were controlled by silver footballs – what was in the silver footballs no-one ever found out.

As for the Shop Window Dummys: if you has to stand around all day with idiotic people gaping at you like fish in a bowl, wouldn't you feel like folding back your fingers and blowing them away?

Blake's 7 features two computers, one of which was actually the seventh member of the band of heroes fighting injustice – Zen, the Buddhist mainframe given to oracular utterances in perfect BBC English.

Orac, on the other hand, could have done not only with elocution lessons but with tuition in etiquette – quite the rudest computer on the small screen, which was pretty stupid considering he had to be carried around all the time

But Blake's motley crew couldn't have survived without his grudging aid, so he has to be numbered among the good guys

Marvin the paranoid android was also on the side of truth, justice, and the English way, however often he may have hummed Pink Floyd

Douglas Adams' view of computers may endow them with far too many human qualities – acute melancholia, maddening politeness, and the inability to answer simple mathematical questions to name but a few – but generally speaking, *The Hitch-Hiker's Guide to the Galaxy* treated robots and computers just the same as humans

On the other side of the Atlantic, Kit, the computerised car in *Knight Rider*, had to play second banana to a hairdresser's dream, but at least he got some good lines and looked pretty

Automan had all the charm and intelligence of an American college quarter back, so the less said about him the better. On balance, Robby the Robot was more of a sex symbol

While television seems to treat robots and computers with tact and consideration, Hollywood has a long way to go

Considering the part computers play in the making of movies today, film producers should be very careful – after all their computers might take industrial action

Computers in the movies

Foot-tapping

If there's something strange, (dum-dum-dum), in the neighbourhood, (dum-dum dum-dum), who ya gonna call? Shaw Taylor! Ray Parker Jnr has a lot ot answer for one way and another in fact *Ghostbusters* the game probably owes more to the 12-inch remix than to *Ghostbusters* the movie which in turn explains why the Spectrum version went straight out of the window in five minutes flat!

For the three people that didn't see Ghostbusters (the movie) over Christmas, the plot involved the wacky exploits of a team of paranormal hit-men, who capture spooks, and, eventually, save the world and civilisation as we know it.

Although the game lacks the Dan Aykroyd script and the Bill Murray performance the Commodore version captures the spirit of the movie better than any spin-off to date

At first, you equip your Ghostbusting business with limited funds, and set off around the map of the city to (in true pursuit of the American Dream) recoup your initial investment by capturing ghosts as quickly and efficiently as possible Succeeding in this task, you go on to face the Ultimate Nasty in the Temple of Zuul

Very good animation and fantastic music make this one a foot-tapping must for any Commodore owner

Program *Ghostbusters* **Price** *£10 99 £9 99, £10 99, £11 99, £4 99 reap* **Micro** *CBM 64, Spectrum MSX, Amstrad, Atari* **Supplier** *Activision, 19 Harley House Marylebone Road, London NW1 5HE*

Superficial

There's not much doubting the heritage of this game, the link with the originator of *Give My Regards to Broad Street* is made obvious by near continuous backing music that turns out to be *Band on the Run* – the old Wings classic

On the Commodore version it's fine, the Spectrum version is odious

The game's links with the film are extended further with the packaging – a large poster includes a fact sheet outlining the game, a London tube map, a detailed plan of London roads (well, it won't replace the A to Z but it's OK) and a description of the characters in the game. The descriptions prove to be a fundamental element in the game, since you must use this information to *guess* where the characters will be at any given time of day

Meet up with all the various people and you collect musical snatches of *No More Lonely Nights* – the missing track from McCartney's album You play McCartney (there's a thrill) and you *must* drive through the streets of London in a souped-up Morris – watch out for sudden turns and other cars

When you stop at a tube station and wait for a character the screen changes to one of you pacing back and forth If you've got it right, out pops Linda, Ringo or whoever The graphics in this section are particularly good – with only a small leap of the imagination you can actually recognise who is supposed to be who

The final section involves mixing the collected track but I've never made it I think *Give My Regards* does capture the flavour of the film, at least in superficial ways, such as the *music* and characters, and also makes a good game Think of it as a good souvenir of the film rather than a literal representation and you won't be disappointed

Program *Give My Regards to Broad Street* **Price** *£7 99* **Micro** *Commodore 64* **Supplier** *Argus Press Software, Liberty House, 222 Regent Street, London W1R 7DB*

Tie Warp

The Rocky Horror Show? I mean, they can't be serious, can they? I mean, it's a joke, isn't it? A computer game based on the *Rocky Horror Show?* Well, CRL have done it.

Not only have they done it but they have kept it closely to at least the scenes and settings of the script

The idea is that as either Brad or Janet (you choose – a rare display of no-sexism in the computer industry) you must rescue your opposite half who has turned to stone and stands forlornly on the stage that forms the central screen of the game

To de-stone your other half you must collect the various parts of the de Medusa which releases the deadly spell. There is a time limit which slips away on a clock at the bottom of the screen The various bits you need are scattered over the 14 different screens of a gothic mansion. There are, needless to say, baddies and these too are characters from the film

Riff Raff wanders about, blasting you wherever he finds you More provocative still (this is what the lads want) Columbia and Magenta creep around the mansion, if they meet you all your clothes are removed and you have to find them

The sight of naked spirits may prove worrying to some people.

At the beginning of the game you are given a quick lesson in doing the Tie Warp and music from the stage show/film abounds – it's pretty good on the Commodore but unspeakable on the Spectrum (of necessity)

The graphics are pretty good, recognisable even The look of the game reminds me slightly of the excellent *Skool Daze* with detailed backgrounds and small but neatly designed graphics for the various characters It works, it does remind me of the film and a few quick plays suggest it's going to be pretty addictive as well.

Program *Rocky Horror Show* **Price** *£8 95* **Micro** *Spectrum* **Supplier** *CRL CRL House, 9 King's Yard, Carpenters Road, Stratford, London E15*

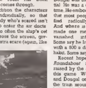
Computers in the movies

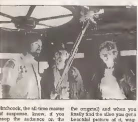
Suspense

The thing most people remember about the movie version of *Alien* is not the action (though the batty alien bursting out of John Hurt's chest is one thing I won't forget in a hurry) but the waiting; the wandering down long, deserted corridors of the Nostromo. And as Alfred Hitchcock, the all-time master of suspense, knew, if you keep the audience on the edges of their seats, when you spring the surprise they'll fall off!

Argus has sensibly tried not to turn the computer version into a zap-the nasty, but concentrated on the search element. You take the roles of commander, ordering the film's characters around a map of the ship, in touch with only one at a time. Good use of sound builds up the atmosphere, doors hiss open, a monitor beats faster, a report that an air grille is missing and the room has been trashed comes through.

In addition the characters react individually, so that somebody who's scared isn't going to enter the air ducts. Every so often the ship's cat runs across the screen, giving an extra scare (again, like the original) and when you finally find the alien you get a beautiful picture of it, wagging its tail.





A brave decision not to go for the arcade market, and one which has resulted in a game that's definitely not to be played alone late at night.

Program *Alien* **Price** *£8 99* **Micro** *Commodore 64, Spectrum* **Supplier** *Argus Press Software Liberty House, Regent St London W1*

Radical dog

Of all my childhood heroes, Dougal was the most influential. He was a dog before his time. He embodied a life-style that most people would still find radically alternative. And where is he today? He made one movie, and then vanished into obscurity. Some say he lives in isolation with a 500 a day sugar lump habit. Some say he is dead.

Recent hopes of a *Magic Roundabout* revival were raised by the appearance of this game. Would Florence and Dougal once again ride the train around the garden before Mr Zebedee bounced in with a cheery, 'Time for bed'? Sadly the answer is no. The game itself is a classic attempt to cash in on a legend. The plot is sound, with Dougal trying to collect sugar cubes to build a house, but in play the fun soon palls. Encouters with your Magic Garden friends (which oddly prove fatal) are all too easy, locating where you start the house is tricky and boredom soon sets in.

This could have been good for younger players but even they are likely to lose patience.

I wipe a tear from my eye as I say that Dougal deserved better.

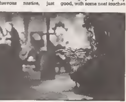
Program *The Magic Roundabout* **Price** *£6 95* **Micro** *Spectrum* **Supplier** *CRL, CRL House 9 Kings Yard, Carpenters Road, Stratford London E15*

Macabre

Steven Spielberg's latest movie, *Gremlins*, was something of a blockbuster last Christmas, and although *Gremlins – The Adventure* (from Adventure International UK) is unlikely to gross quite as many pennies, it is none the worse for that.

In the graphic adventure mould, it starts off with you (Billy the hero) trapped in your bedroom by a dart-throwing Gremlin, having already been tricked into feeding the Mogwai after midnight.

This turns them into evil mischievous nasties, just about to overrun your home town of Kingston Falls.



Many elements of the film have been included in the program, the microwave, the blender the department store and even the flasher, so I can forgive the oversight concerning the flying granny as AI simply exercising a modicum of good taste!

The graphics are pretty good, with some neat touches of limited animation being (I suspect) a nod in the direction of the game's cinematic origins.

The game is also highly playable with moments of the macabre humour capturing the spirit of the film as well as this format can.

Only one anomaly. Adventure International call this 'an introductory adventure for 12-15 year olds'.

With Gremlins the movie rated as AA, work the rest out for yourself!

Program *Gremlins* **Price** *£9 95* **Micro** *Spectrum, CBM, BBC, Electron* **Supplier** *Adventure International (UK), 85 New Summer Street Birmingham B19 3TE*

Computers in the movies

Double sweet

Minder the game had a difficult job ahead of it – how on earth do you try to capture the stylised local world of Arfer Daley and petty criminals?

Don Priestley of DK Tronics reckoned the solution was to create a bizarre trading game where you are Arthur and by wheeling and dealing you try to earn your crust and cigars

The key element to the game is buying things cheaper than you sell them having found the right dealers and persuaded Terry to lug the stuff around. You also have to watch out for Chisholm the policeman who will scare off your clientele and possibly nab you for dealing in stolen goods

So, the plot reflects the TV programme fairly well – better than some awful platform and ladders game anyway The really important quality of *Minder* the TV programme is the language, and arcane fake cockney rhyming slang that surely never existed. I mean, did anyone ever say that some thing was 'double sweet"?

Getting the language style into the game is perhaps its greatest achievement Not only do the computer characters 'speak' in *Minder* talk: "Have I got a lovely little earner for you – only £50" but you can speak back in the authentic tongue The computer will understand you if you type in, "leave it out, squire, make it £30 and we're talking", mainly because it just looks at the figure and knows what to expect

As you play *Minder*, you find you start to bring the TV programme to the game, talking in adapted East End lingo and wearing a funny hat. It's not a turning point in computer programming but it is fun and does capture as much of the flavour of the TV programme as you could hope for

Definitely double sweet, my son

Program *Minder* **Price** *£9.95* **Micro** *Spectrum* **Supplier** *DK 'Tronics Unit 6 Shirehill Industrial Estate Saffron Walden Essex*

Tactical

Airwolf was a successful TV series about the everyday adventures of a super-dooper helicopter that could blast almost anything it liked and the people who operated it.

Airwolf the game is good as a straight blam-blam dodge and has pretty good, large graphics of the helicopter but there's not really any other point of comparison

On the other hand the original TV programme was really a kids' comic book brought to life(?), so what could you expect.

The helicopter has to be carefully piloted past various baddie installations through a series of chambers to rescue a team of trapped scientists – I suppose it could have been one of the episodes of the program.

Part of the skill of the game is tactical – to open up some sections of the caverns you have to knock out certain specific targets

I like the game better than the TV programme – I think it's infinitely more realistic

Program *Airwolf* **Price** *£6.95* **Micro** *Spectrum, Commodore* **Supplier** *Elite 55 Bradford St Walsall*

Disappointing

The music may be the same, but fans of Indiana Jones might ont find anything else familiar in US Geld's game *Indiana Jones in the Lost Kingdom*.

The two Indy films, *Raiders of the Lost Ark* and *The Temple of Doom*, were deservedly enormous hits Combining hair-raising stunts, fast-moving action and tongue-in-cheek humour, the films set box-office records and made a star of Harrison Ford. It's a pity the programmer of the game will never achieve similar success

Indiana Jones in the Lost Kingdom is one of the most disappointing of movie spin-off games.

Without the distinctive figure of Indy on the box, it wouldn't be worth a second look, because it's nothing more than a ladders-and-platforms effort with few redeeming features

The animation is best described as "average" The sprites are single-colour, which leaves the redoubtable Indy looking a trifle pale as he battles through the Lost Kingdom

The loading display tells us that the six chambers of the castle Indy finds in the jungle are full of hidden treasures and terrible monsters

In fact, the monsters are wiggly blobs which wouldn't frighten my grandmother (87 and still going strong) and the treasures seem hardly worth winning

Indy's manly strides in the film are replaced with a sideways scuttle in the game, and that's not all that's different about it.

The main element missing is a sense of humour, the best thing about the Indy films is that they can make you laugh even when the heroes are in the trickiest situations The game, though, tries to replace action and wit with clichéd arcade game set-pieces

If the films represented a step back to the shallow action adventures of the 30s, then at least they did it well, the game doesn't capture anything of the flavour, and once you've got past the loading screen you'll wish that the Lost Kingdom had remained that way

Program *Indiana Jones in the Lost Kingdom* **Price** *£9.95* **Micro** *Commodore 64* **Supplier** *US Gold, Unit 10, The Parkway Industrial Centre, Heneage St, Birmingham, B7 4LY*





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Tom Hussey
POPULAR Computing WEEKLY
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SOFTWARE
FIRE

In graphic detail

***Graham Taylor** looks at the world of commercial computer graphics and find all is not as it seems*

Computer graphics in films have a very short history, shorter than you might think.

There is an important difference between some films which used computers for specific, computer-like effects, often as part of a computer system depicted on screen, and those few, more recent films – like *Tron* or *Last Starfighter* – where computer graphics have been used to actually produce sequences of the movie – their advantage is that computer graphics can depict those impossible scenes and objects which animation and models could not achieve.

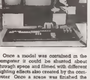
Films with token computer effects include *2001* (remember the various docking sequences and the dashboard of the shuttle?) some of the 'Death Star Trench' visuals in *Star Wars* and odd 'instrument panel readings' shots in nearly every science fiction film after 1976 including such gems as *Buck Rogers in the 25th Century*

If you had to choose one film with excellent computer generated graphics is might be the much underrated *Westworld*. *Westworld* envisaged an adult Disneyland where robots, visually indistinguishable from humans, served the wildest fantasies of the human visitors The vision of the world 'through the robots eyes' took the form of a kind of mosaic of especially digitised pictures which looked as though the robot's vision consisted of a series of discreet blocks The same technique was recently used in a series of cigarette adverts where the object depicted only became clear when the pictures were viewed from a distance

In *Tron* many of the moments in the film commonly regarded as computer graphics are in fact animation The chief computer generated effects are the light cycles sequence (which gave rise to a thousand tedious games) the tanks and the 'recognisers' – platforms on legs The group responsible for these and a few other effects were MAGI – the Mathematical Applications Group who used a system called Synthavision to produce the solid object shapes which could then be manipulated in space

Apart from a top secret and as yet unfinished computer generated movie called *The Works* (some stills of which look astounding), the most recent computer and in some ways the most impressive computer movie so far is *The Last Starfighter* The main team involved in this film was Digital Productions, some of whom had also worked on *Tron*.

The bulk of the work involved transforming drawings – 'blue prints' – onto models held in the computer This process was a matter of digitising the pictures as a series of polygons – various flat surface shapes which when combined make up curved as well as flat surfaces



Once a model was contained in the computer it could be shunted about through space and filmed with different lighting effects also created by the computer Once a scene was finished the whole mass of data was fed into a Cray which worked a film recorder – a mixture of a film camera and a cathode ray tube which turns the digital data into light For technology buffs the Cray worked at around a billion computations a seconds As a comparison with *Tron*, the pictures in *The Last Starfighter* used somewhere between 350,000 to 400,000 polygons per frame *Tron* used about 7,000. *The Last Starfighter* remains the computer graphic state of the art – for the moment.

But you don't need a Cray to produce computer graphic effects The likes of the Cray are available to only a tiny number of giant companies

Yet computer special effects are big business and do involve a lot of companies.

A contradiction? No, because where computer graphics really count is in the wonderful world of TV ads and logos

There is one simple reason why computer graphics aren't seen much in movies and are in videos tape (the TV medium) – and that's resolution. To shunt objects around on film convincingly means making thousands of calculations on thousands of pixels whereas for video you only need a resolution of 700 pixels or so. It's the difference between a mere quarter of a million quid for a Bosch video system or the GNP of a small nation for a Cray

One of the top companies producing computer graphics to order for adverts is The Moving Picture Company – a firm that specialises in all sorts of film and video work, and sprawls over under and behind an enormous tinted windowed building in Noel Street, London W1

Heading the computer graphics department is Maggie Allison whose friendly but no-nonsense manner is probalby part of her success Despite having been up till three o'clock working the night before, she explained patiently the way the department operates. "We started in computer graphics about three years ago when Mike Luckwell who started the company saw systems working in the States "

The first system used a camera, two Hewlitt Packards and output via fibre optic lights Effects were produced frame by frame using a plotter The first job was for the Phillips Laservision system to be in stores to promote the system. "That was followed by work for Hoover and the title sequence for *The Real World* TV programme "

Now the company operates a number of computer systems, the heart of which is a dedicated computer called the Bosch FGS 4000 The machine is actually suprisingly small (an elongated QL) and neatly contained – the set of computer, discs computer information monitor and picture monitor looking not unlike a souped up home set. You'd get quite a few QL's for £250,000 though.

Recent work has included commercials for the Halifax Building Society and the Sun Alliance and a logo for TVS

When a story board is complete the



Computers in the movies

people who turn that into computer graphics are, surprisingly, not graphic designers or artists but programmers – albeit programmers of a slightly unusual nature "What I look for from a prospective programmer is the ability to write in Pascal some 3D experience and the ability to think very logically "

Turn round times for work can be astoundingly brief, a couple of weeks or even days is not unusual – very different from the usual state of the advertising industry where planning and discussion can often take months. The speed gives rise to another important factor in the success of the Moving Picture Companies operation – price. It could cost a mere £20 000 for your ad Peanuts

"The computer graphics market is widening, not because computer graphics are becoming more accepted but because it's often cheaper "

One of the surprising problems Maggie faces is the occasional over-enthusiasm of potential clients "People often don't know what is available and think things are computer graphics which are not things get fashionable and people want them but in fact their needs may be quite different " One thing that is often confused with computer graphics is computerised camera control "By using a computer for precise control of a camera's movement it is possible to film models in a very realistic way "

There are limits to what the Bosch system can do "We would have trouble quickly manipulating an image that was very complex like a map The processing speed of the Bosch does occasionally mean that things can be done in real time but there are ways around it." Dave Throssell who is one of the programmers working with the machine explained "Since the end result goes on to tape we can simply put the computer images down frame after frame and then speed it up " Dave also told me more about the Bosch system – It uses, wonder of wonders, a 68000 "That's not really what's important, though – all it has to do is deal with the actual control terminal. The clever stuff like scan rates and the rest is done by a series of special boards." The system has a 4M memory with storage of 100M

I am always surprised when the expensive 'real' gear looks a lot like your average home micro on screen but the menu of options on the Bosch really does look just like your ordinary (fill in the name of your micro here) On the other hand the way in which you can generate images is pretty sophisticated

There may seem to be all the difference in the world between the work of the Moving Picture Company and the glamorous world of the computer effects in *The Last Starfighter* but the way computers open up the world of the imagination is really the same The objectives may be different but the scale and range of possibilities for computers graphics auger an exciting future

The silicon screen

***Graham Taylor** scrolls smoothly through the history of computer game as computer movie*

In the beginning there was a game called *Pong* where two white rectangles moved up and down and a smaller square bounced between them. Or didn't Then came *Space Invaders* where variously coloured, squarish blobs jerked, rank by rank, left and right across the screen whilst a rectangularish blob moved left and right across the bottom shooting little white lines Although the various geometric shapes started gradually to look a little more like insects and their movement became a little smoother, the idea that what you were seeing could in any sense be said to have aspirations towards being a movie was absurd

The idea that a computer game could be graphically sophisticated enough to be compared to film and cartoon is only a couple of years old. It developed, obviously, with the technology and in particular with the escape of the arcade game from the three minute straitjacket, ie, when games stopped being one repetitive screen, but instead began to have multiple screens of different kinds

There is little point in trying to pin the whole thing down to any particular game since the 'movieness' of games is a fairly abstract, ill-defined concept anyway But for my part games like *Donkey Kong* and *Pacman*, though technically fairly simple, had graphic designs with enough character for people to actually identify them and that brings them, it seems to me, close to being cartoons The success of *Pacman* had a lot to do with the rolling eyed little ghosts whose design gave them a cute, but horribly determined personality

The number of screens and the complexity of computer games increased rapidly, more wasn't always better but it could be One of the games that best illustrates the current state of the arcade game as movie or cartoon is *Frak!* The basic game idea of collecting some things and dodging other things is here, but the design and the sheer size of the central graphic shape of the caveman makes the game particularly 'cartoonish' and that feeling is a very significant part of the appeal of the game

It is the quality of the 3D graphic design that has made the two recent Ultimate releases, *Alien 8* and *Knight Lore*, particularly well regarded critically and, more importantly, very successful. Both games feature objects, characters steps, walls, platforms, etc, which have a solidity, a sense of realness, which like *Frak!* brings the idea of computer games as cartoons another stage further

But there is more to the idea of games as movies than the quality of the graphics What about character independence and plot complexity? Until fairly recently the idea of complexity, that a computer game could have enough to it to merit not minutes, but days or weeks of play, was the exclusive province of text adventures

The text adventure fired the imagination in a similar way to books and radio where narrative created dramatic images in the mind Above all, the text adventure had scope, complete worlds of dragons, trolls, caverns, mountains, epic battles, magic, life and death They have many of the elements of a movie, but lack one crucial ingredient graphics

The first step towards mixing the dramatic vision of text adventures with the growing graphics sophistication of arcade games came with the addition of static pictures to illustrate key locations in the adventure *The Hobbit* did this but added one more step, the idea of using artificial intelligence techniques to give characters within the adventure a degree of seeming independence In the *Hobbit* this really only meant two things, sometimes characters would have to be asked for help or information several times before they would provide it and Thorin kept sitting down and singing about the Gold

The *Hobbit's* notion of independent characters, however clumsy it proved in practice, was a key stand in the program's success People liked the idea, in their minds at least it brought 'movieness'' closer

The next step after text adventures with static illustrations and seeming character independence was, inevitably, moving graphics It happened in various ways, and with varying degrees of success So programs simply put a little simple animation into the static pictures so that, for example, the torches



on the wall of the cavern might appear to flicker and burn. It looked pretty, but wasn't and isn't a major step forward towards the computer movie *Valhalla* was a lot more like it, and was developed by a company whose main objective was to create the first computer movie – Legend They called *Valhalla's* operating system Moviesoft.

Valhalla certainly got some things right It felt rather like an adventure but looked like a little film The character independence may not have been all that much better than the *Hobbit's*, but instead of being told that Thorin was sitting and singing about gold, you saw a couple of animated characters start a fight by throwing food at one another *Valhalla* presented something that was more adventure than arcade in feel and scope, but which featured lots of detailed graphics and animated figures

After *Valhalla* a number of programs were released which all took the movie idea further in one direction or another *Avalon* from Hewson Consultants featured 3D graphics, combined with a complex plot where all the game instructions could be expressed through joystick commands

Deus Ex Machina used a tape synced to the computer program to bring in music, sound effects and spoken narra-





tive The end result was powerful but did not sell well, perhaps it didn t seem to be the sort of thing that could be played over and over again

The true follow up to *Valhalla* is undoubtedly *Tir Na Nog* which also feels like an adventure but looks like an arcade game The plot is complicated and taken from authentic Celtic myth The task in the game, to recover the parts of a seal, requires extraordinary efforts of though and perseverance As an adventure it is one of the most difficult ever yet there is no text input whatsoever and only occasional text information from the computer

The events in *Tir Na Nog* all happen graphically, and the central hero Cucullainn is one of the most impressive pieces of animation ever seen on a home micro He strides across the screen like a Celtic Bovver Boy, hair waving in the wind, full of character Backgrounds are detailed (a distant volcano can be seen to belch smoke from time to time) and the other beings in the game are fully detailed and when first discovered, dramatic and impressive

Tir Na Nog looks like a very detailed cartoon, the character independence still isn't totally convincing, but the adventure element is satisfying and the all important 'vision' of the game is vast

The follow-up to *Tir Na Nog, Dun Daroch* promises more characters, more independence (we shall see) and a more detailed playing area. With luck the computer movie will move that bit closer The next big step will have to be technical faster computers with more memory for more detailed graphics and ever more complex and vast playing areas More memory, too, to get the logic of character independence right and make that particular computer illusion work We ought also hope, not just for detailed lifelike graphics, but scrolling and distance effects that can mimic camera styles – from a general long shot to a face close-up

This time next year it looks as though a 128K computer with a fast 68000 processor, very high res graphics and cheap memory and storage facilities will become a reality in the home market For those of us watching the pace of development of the computer game as computer movie, things will be hotting up

Explosion

A strategy game with explosive tendencies for the Spectrum by *Robin Drayton*

Explosion is a strategy game for two players played on a square or rectangular playing area. Each player places, in turn, a piece on an empty position or a position that they already occupy.

Each playing position has a maximum number of pieces that it can hold. When this is exceeded the position explodes, sending one piece to each adjacent horizontal and vertical position. These pieces are added to any pieces on the adjacent squares, capturing any pieces belonging to the opponent. An exploding position may make so adjacent position reach its exploding level and thus set off a chain reaction.

A corner position explodes when it has two pieces, a side position when it has three pieces, and interior position when they have four pieces. The game finishes when one player eats off an infinite chain reaction.

The program allows yoe to choose the size of the playing area, allowing any size from 3 by 3 to 8 by 8. To play a piece, move the flashing cursor to the position required with the arrow keys and then press 'p' key to place the piece. The program is error trapped, so you will not be able to place a piece on an illegal position.

Program Notes

165-210	Checking input and moving cursor
215-236	Checking for chain reaction
240-285	Computing and printing scores
1000-1045	Checking for exploding level
1050-1090	Explosion
1400-1420	Print name of winner
1500	Delay loop for moving cursor
2000-2230	Initialising game

```
150 GO SUB 2000
155 IF INKEY$="" THEN  GO TO 155
160 IF INKEY$="p" OR INKEY$="P" THEN  GO TO 195
165 LET p=CODE (INKEY$)
170 LET xi=-(p=53)+(p=56): LET yi=-(p=55)+(p=54)
175 IF xi=0 AND yi=0 THEN  GO TO 155
180 IF (x=2 AND yi=-1) OR (x=m AND yi=1) OR (y=2 AND xi=-1) OR (y=n AND xi=1) THEN  GO TO 155
185 LET x=x+yi: LET y=y+xi: POKE k,(PEEK k)-128: LET k=k+2*xi+64*yi: POKE k,(PEEK k)+128
190 GO SUB 1500: GO TO 155
195 IF ATTR (2*x,2*y)=248 THEN  GO TO 205
200 IF ((ATTR (2*x,2*y)-128)/8)<>i THEN  BEEP 1,-10: GO TO 155
205 LET a(x,y)=a(x,y)+1: FLASH 1: PRINT AT 2*x,2*y;a(x,y): FLASH 0: LET q=0: PAPER 7: PRINT AT 2*m+3,1;"          ": PAPER i: GO SUB 1500: GO SUB 1000
210 IF q=0 THEN  GO TO 245
215 LET xl=x: LET yl=y
220 FOR x=2 TO m: FOR y=2 TO n
225 GO SUB 1000
230 NEXT y: NEXT x
235 IF q=1 THEN  LET q=0: GO TO 220
240 LET x=xl: LET y=yl: POKE k,(PEEK k)+128: LET r=0
245 LET s5=0: LET p5=0: LET s6=0: LET p6=0: FOR g=2 TO m: FOR h=2 TO n: LET b=ATTR (2*g,2*h)
250 IF b=40 OR b=168 THEN  LET s5=s5+a(g,h): GO TO 260
255 IF b=48 OR b=176 THEN  LET s6=s6+a(g,h)
260 NEXT h: NEXT g
265 PRINT AT 4,30; PAPER 7;"   ";AT 4,22; PAPER 5;s5;" pieces": IF s5=1 THEN  PRINT  PAPER 7;AT 4,29;" "
270 PRINT AT 9,30; PAPER 7;"   ";AT 9,22; PAPER 6;s6;" pieces": IF s6=1 THEN  PRINT  PAPER 7;AT 9,29;" "
275 IF st=1 THEN  INPUT "Another game? "; LINE p$: IF CODE p$=89 OR CODE p$=121 THEN  CLS : GO TO 150
280 IF st=1 THEN  STOP
285 LET i=11-i: PAPER i: PRINT AT 2*m+3,1;a$(i-4, TO b(i-4));" to move": GO TO 155
1000 IF a(x,y)<=1 THEN  RETURN
1005 IF a(x,y)=2 THEN  LET p=2: GO TO 1020
1010 IF a(x,y)=3 THEN  LET p=3: GO TO 1020
1015 IF a(x,y)>=4 THEN  LET p=4
1020 IF x=2 AND (y=2 OR y=n) THEN  LET e=2: GO TO 1050
1025 IF x=m AND (y=2 OR y=n) THEN  LET e=2: GO TO 1050
1030 IF p=2 THEN  RETURN
1035 IF x=2 OR y=2 OR x=m OR y=n THEN  LET e=3: GO TO 1050
1040 IF p=3 THEN  RETURN
1045 LET e=4
1050 BEEP 0.1,15: LET a(x+1,y)=a(x+1,y)+1: IF x<>m THEN  PRINT AT 2*(x+1),2*y;a(x+1,y)
1055 LET a(x-1,y)=a(x-1,y)+1: IF x<>2 THEN  PRINT AT 2*(x-1),2*y;a(x-1,y)
1060 LET a(x,y+1)=a(x,y+1)+1: IF y<>n THEN  PRINT AT 2*x,2*(y+1);a(x,y+1)
1065 LET a(x,y-1)=a(x,y-1)+1: IF y<>2 THEN  PRINT AT 2*x,2*(y-1);a(x,y-1)
1070 LET a(x,y)=a(x,y)-e
1075 IF a(x,y)=0 THEN  PAPER 7: BRIGHT 1
1080 PRINT AT 2*x,2*y;a(x,y): BRIGHT 0
1085 LET q=1: PAPER i: LET r=r+1: IF r>mn THEN  GO TO 1400
1090 RETURN
1400 PAPER i: PRINT AT 21,1;a$(i-4, TO b(i-4));" wins": LET q=0: LET st=1
1410 FOR f=1 TO 10: BEEP 0.1,f: NEXT f
1420 GO TO 245
1500 FOR f=1 TO 50: NEXT f: RETURN
2000 DIM a$(2,12): DIM b(2)
2010 INPUT "Name of first player? "; LINE p$: GO SUB 2230
2020 IF LEN p$>10 THEN  GO SUB 2225: GO TO 2010
2025 LET a$(1)=p$: LET b(1)=LEN p$
2030 INPUT "Name of second player? "; LINE p$: GO SUB 2230
2040 IF LEN p$>10 THEN  GO SUB 2225: GO TO 2030
2050 LET a$(2)=p$: LET b(2)=LEN p$
2100 DIM a(10,10): INK 0: PAPER 7: CLS : LET st=0: LET r=0
2105 INPUT "Number of rows on board? (3-8) ";m
2110 IF m<3 OR m>8 THEN  BEEP 1,-10: GO TO 2105
2115 INPUT "Number of columns on board?(3-8) ";n
2120 IF n<3 OR n>8 THEN  BEEP 1,-10: GO TO 2115
2125 PRINT  INVERSE 1;AT 0,22;"SCORES"; INVERSE 0;AT 2,22; PAPER 5;a$(1,1 TO b(1));AT 7,22; PAPER 6;a$(2, TO b(2)): LET mn=2*m*n
2130 LET m=m+1: LET n=n+1
2135 BRIGHT 1: FOR x=4 TO 2*m: FOR y=4 TO 2*n: PRINT AT x,y;" ": NEXT y: NEXT x
2140 FOR x=2 TO m: FOR y=2 TO n: PRINT AT 2*x,2*y;a(x,y): NEXT y: NEXT x: BRIGHT 0: LET i=5: PAPER i: PRINT AT 2*m+3,1;a$(i-4, TO b(i-4));" to move"
2150 LET k=22660: POKE k,(PEEK k)+128
2160 PAPER 7: INVERSE 1: PRINT AT 11,22;"EXPLODING";AT 12,24;"LEVEL": INVERSE 0
2170 PRINT AT 14,22;"Corners  2";AT 15,22;"Sides    3";AT 16,22;"Interior 4"
2180 PRINT AT 18,21;"Arrow keys";AT 19,21;"move cursor";AT 20,21;"Press P to";AT 21,21;"play piece"
2190 BRIGHT 1: PRINT AT 3,3;"▛";AT 2*m+1,3;"▙";AT 3,2*n+1;"▜";AT 2*m+1,2*n+1;"▟"
2200 FOR x=4 TO 2*m: PRINT AT x,3;"▌";AT x,2*n+1;"▐": NEXT x
2210 FOR y=4 TO 2*n: PRINT AT 3,y;"▀";AT 2*m+1,y;"▄": NEXT y: BRIGHT 0
2215 LET x=2: LET y=2: PAPER i
2220 RETURN
2225 PRINT AT 21,1;"Maximum of 10 characters please": BEEP 1,-10: PAUSE 30: RETURN
2230 IF CODE p$>96 THEN  LET p$(1)=CHR$ (CODE p$-32): RETURN
```


DIGITAL
INTEGRATION

Making a connection

*The Call bug strikes again – a new solution presented by **Dr R K Lowery***

The problem of *Calling* machine code routines from large super Basic programs is well documented and a patch, linked into the name table, has been published in *Popular* (Vol 3 No 47). However, an attempt to use this patch, linking it with a small Basic bootstrap then *Lrunning* a large (52K) Basic program ended in a machine crash. One can only assume that *Lrun* recreated the name table thus relinking the bugged Rom routine.

To get over the problem I have adopted a different strategy using a switched service routine linked into the 50 Hz interrupt sequence.

The QL services interrupts by walking along a linked list executing the routines contained in the list. Each link consists of 8 bytes of Ram (two long words) containing a pointer to the next link in the chain in the first (low address) four bytes and the address of the service routine in the other four bytes.

Inserting a link into the list is simplicity itself using a QDOS routine executed via the *Trap* instruction (the address of the new link is passed to the QDOS routine via register *A0*).

The service routine is set up such that no action is taken if the switch byte is non-zero. If the value is zero then the routine to be *Called* from Basic is executed and the switch reset to a non-zero value. The switch byte is located with the machine code in the resident procedure area where it is safe from relocation by QDOS and its address (relative to *Respr(O)*) is known to Basic programs. Therefore a Basic program can poke the switch byte to zero thus effectively *Calling* the application routine. Passing of parameters can be effected by *Pokeing* addresses known both to Basic and the machine code routine (fixed with respect to *Respr(O)*).

In the example given, the interrupt service routine is 'armed' and the large Basic program run using the small bootstrap routine:

```
100     a = Respr(O)
110     LBYTES rodv1-code,a
120     CALL a
130     LRUN rodv1-main
```

Each call to machine code in the Basic program 'main' requires the following series of Pokes.

```
100     ad – RESPR(O)
110     POKE ad + 5,value-1
120     POKE-W ad + 6,value-2
130     POKE-W ad + 8,value-3
140     POKE ad + 4.0
```

This is equivalent to *Call* ad,value-1,value-2,value-3, as the service routine loads D1 (byte) and D3 (word) from the addresses poked by Basic.

The example given is relatively simple, enabling a single machine code routine to be executed. However, there is nothing to prevent extension of the technique, possibly using a bit mask instead of a complete byte to control the switching in of the application routines.

```
LOC      OBJECT        STMT       SOURCE STATEMENT

                          5 *
                          6 *     Jump table for subroutine entry
                          7 *     Point (4 bytes)
                          8 *
0000'    6000 00:10       9             BRA SETUP
                         10 *
                         11 *     Switch byte - initialized to off
                         12 *
0004'    01              13 DAREA       DC.B       1
                         14 *
                         15 *     Parameters passed to/from BASIC
                         16 *     In this example 5 bytes are
                         17 *     assigned to three Parameters
                         18 *
0005'    =0001           19             DS.B       1
0006'    =0004           20             DS.W       2
                         21 *
                         22 *     8 bytes reserved for the new
                         23 *     entry in the 50 Hz interrupt
                         24 *     linked list
                         25 *
000A'    =0009           26 LINKL       DC.L       2
                         27 *
                         28 *     Link in interrupt service
                         29 *     Address of linked list entry is
                         30 *     stored in A0. The address of
                         31 *     the service routine is stored
                         32 *     in the top 4 bytes. The QDOS
                         33 *     routine is executed by setting
                         34 *     D0 to 01C and calling TRAP#1.
                         35 *
0012'    41FA FFF6       36 SETUP       LEA        LINKL,A0
0016'    701C            37             MOVEQ      #01C,D0
0018'    43FA 000E       38             LEA        INTSER,A1
001C'    2209            39             MOVE.L     A1,D1
001E'    2141 0004       40             MOVE.L     D1,4(A0)
0022'    4E41            41             TRAP#1
0024'    4280            42             CLR.L      D0
0026'    4E75            43             RTS
                         44 *
                         45 *     Interrupt service routine
                         46 *     Stack A0 and ascertain switch
                         47 *     byte status.
                         48 *
0028'    2F08            49 INTSER      MOVE.L     A0,-(A7)
002A'    41FA FFD8       50             LEA        DAREA,A0
002E'    4A10            51             TST.B      (A0)
0030'    6700 0005       52             BER        EXEC
                         53 *
                         54 *     Switch non-zero, restore A0
                         55 *     and return.
                         56 *
0034'    205F            57             MOVE.L     (A7)+,A0
0036'    4E75            58             RTS
                         59 *
                         60 *     Routine required to execute
                         61 *     Stack remaining registers.
                         62 *
0038'    48E7 FF7C       63 EXEC        MOVEM.L    A1-A5/D0-D7,-(A7)
```

```
                         *
                         *      Load Parameters into the
                         *      registers
003C'   4281                          CLR.L    D1
003E'   1228 0001                     MOVE.B   1(A0),D1
0042'   4282                          CLR.L    D2
0044'   3428 0002                     MOVE.W   2(A0),D2
0048    4283                          CLR.L    D3
004A'   3628 0004                     MOVE.W   4(A0),D3
                         *
                         *      Execute application routine
                         *
004E'   6100 0014                     BSR      SPLOT
                         *
                         *      Restore switch to 1
                         *
0052'   41FA FFB0                     LEA      DAREA,A0
0056'   123C 0001                     MOVE.B   #1,D1
005A'   1081                          MOVE.B   D1,(A0)
                         *
                         *      Restore registers
                         *
005C'   4CDF 3EFF                     MOVEM.L  (A7)+,A1-A5/D0-D7
0060'   205F                          MOVE.L   (A7)+,A0
0062'   4E75                          RTS
                         *
                         *      Application routine source
                         *      code starts here.
                         *
0064'   4E75             SPLOT        RTS
                         *
                         *
                         *
                                      END
```


KOMPLEX
LEGEND

Without a trace

*The second part of the Tracer project for the BBC B written by **Calvin Woodings***

Last week we presented the first part of the four part series building up database software dedicated to index creation and searching. We listed the program used to create new indexes which is called when you select *Option 4* from the menu of the main program.

This week we start work on the main program and provide the Menu routine, the Search Index option, and the procedures needed to *Load* and *Save* the indexes you create. The last part of the main program will be given next week.

Main Program Notes

Space becomes more critical at this stage, and you should exclude the *Rems* and blank lines which have been added to the listing to improve clarity.

As was the case last week the 'y' and 'g' characters within the print statements refer to the yellow and green teletext colour codes which are entered using the shifted function keys.

Line 70 – initialises the variables and sets up the error trap. *HIMEM* is the index start address and is the address used to store the heading created by the New Index program. (If you are able to use a program compactor after you've got *Tracer* working properly, you can reduce *HIMEM* to *&1FD0* and increase the number of records your index will store. If you are careless and leave too many extra spaces, you may get the dreaded *No Room* error and have to set *HIMEM* to a higher value until you've tidied it up.) *J%* stores the number of bytes left in memory for use by the index. *E%* contains the *Y* coordinate of the last line on the screen in display mode. *F%* is a flag used by the display. *I%* is a frequently used constant. *K%* is a flag used by the print routine. *P%* and *S%* are string storage buffers and *f%* is the address at which the index named is stored.

Line 80 – prints the Menu screen. Your selection from the menu is stored in *O%* by *FNmn* and inputs from 1 to 6 cause the selection of the relevant procedure by *PROCop*. If you select option 6, ie, you choose to leave *Tracer*, the screen is cleared, and you are given a last opportunity to save the index before finishing.

Line 90 – ensures that *Escape* (error number 17) returns you to the menu. Other errors are reported. (This line will be altered to accommodate the machine code print routine in the last part of the series.)

Line 100 – traps the *File Not Found* error (*&D6*) which occurs if you try to load an index which is not on the disc in the drive. It clears the name you entered by poking a carriage return into the filename address *(?f% = 13)* and then uses the *Info* command from your DFS to display the indexes on the disc (ie, those files in the *'I'* directory).

Line 110 – waits for a key press before returning to the menu.

Line 120 – *PROCop* takes the option in *O%* and calls the procedure which provides the service you require.

Line 130 – *FNmn* prints the menu. Note the use of a window *(VDU28)* to avoid a series of *Printab(x,y)* statements which would have used more space. After removing the window screenline 21 is cleared and the input routine is used to get your selection.

Line 140 – *PROCt* sets up the screen format, and the parameter *$P%* carries the screen title which is printed out at the top in double height letters.

Line 150 – the start of the vital search index procedure *PROCse* uses *PROCin* to make sure a valid index name is present, and commences the loop which is concluded at Line 220. *H%*, the flag which when true indicates that the word you are seeking has been found, is zeroed, and the screen heading becomes the index name *(PROCt)*. Some on screen help is provided, and the input routine loads *$S%* with the object of your search. *PROCh* prints out the index header line, the cursor position indicator *(L%)* is set to start on Line 6, and the variable *D%* is loaded with the address of the last record in the index.

Line 160 – sets up a loop to step from the start of the index to the end in 40 byte blocks. (If you remember from last week, the 40 bytes following *HIMEM* contain the index header, and the next 8 bytes contain the field count and length data.)

Line 170 – uses the very fast *Instr* command to see if your keyword at *S%* is contained in the 40 byte record starting at address *N%*. If it is, *Z* becomes true, and if there's room on the screen to print the record out, ie, if *L% < E%*, then the record is printed. The screen line count is increased by one, and the keyword-found flag *(H%)* is set to true.

Line 180 – resets the screen line count to six if the last record printed went on the last available line. *PROCco* waits for a keypress before restarting the loop.

Line 200 – prints blank lines to clear any printout left over from previous screens.

Line 210 – checks the keyword found flag and prints up the necessary message if it was not set.

Line 220 – allows you to stay in the Search option until you respond with a *'Y'* in the Quit Search question.

Line 230 – is the procedure used to *Load* indexes into memory. The screen is set up, the index name you type in is put into memory

```
   10 REM TRACER: A SUPERFAST INDEX CREATION AND SEARCH PROGRAM
   20 REM BY C.R.WOODINGS (C)1985
   30
   40 REM MAIN PROGRAM PART 1 OF 2
   50
   60 REM*********************************
   65
   70 MODE7:HIMEM=&20D0:J%=&7BA0-HIMEM:E%=19:F%=0:I%=40:K%=0:P%=&C00:S%=&C50:f%=
&CA0:ONERRORGOTO90
   80 REPEAT:O%=FNmn:PROCop:UNTILO%=6:CLS:IF FNyn(12,"Save Index") PROCsv:CLS EL
SE END
   90 IF ERR<>17 CLS:REPORT:PRINT" at ";ERL ELSE GOTO80
  100 IF ERR=&D6 ?f%=13:PRINT''"Indexes: "';*info I.*
  110 PROCco(21):GOTO80
  115
  120 DEFPROCop IFO%=1 PROCse:ENDPROC ELSE IF O%=2 PROCad:ENDPROC ELSE IF O%=3 P
ROCdi:ENDPROC ELSE IF O%=4 CHAIN"NEW":ENDPROC ELSE IF O%=5 PROCsv:ENDPROC ELSE E
NDPROC
  125 REM The first 'y' in the Menu lines are yellow teletext codes <SHIFT f3>
  126
  130 DEFFNmn PROCt("TRACER"):VDU28,12,10,30,9:PRINT"1ySearch Index"'"2yAdd Reco
rds"'"3yDisplay/Edit"'"4yStart New Index"'"5ySave Index"'"6yQuit",VDU26:PRINTTAB
(0,21)SPC39;PROCpr(20,"yEnter Option "):=VALFNin(1,40,55)
```

at *I%*, and the necessary **Load* command line is assembled at *P%* (ie at *&C00*) Note the use of *Str$* to convert the *HIMEM* address into *ASCII* codes so that it can be read by the command line interpreter at *&FFF7* (See UG page 463 for details) Finally, the index length is read into *W%* direct from the *OSFILE* control block used by the basic **Load* command.

Line 240 – starts the index save procedure by setting up the screen and preventing you from saving a blank index

Line 250 – unlocks all the files in the 'I' directory

Line 260 – uses the command line interpreter to **Save* the index (see Line 240 above) It then locks the index so that the new index routine you typed in last week will not accidentally erase a valuable index

Lines 290-390 – are the same as Lines 380 to 480 from last week. If you want to avoid retyping them, and are thoroughly familiar with merging programs as described in the User Guide page 402 you can save a little time by extracting them from *New*, renumbering them, and transferring them to this program

Line 400 – prints out the index header line which you stored at *HIMEM* with the New Index routine

Line 410 – checks to see if an index has been loaded and if not it loads one

Line 420 – gives you an opportunity to change the index whenever *PROCfn* is called.

That's all for this week The remainder of this program, Lines 440 to 680, will be in next weeks magazine, along with the *Boot* program which loads it all at the right place.

Remember, if you would like to have the whole series up and running on a 40 track disc, send £12 to the author at 12 Copsewood Avenue Nuneaton, Warwicks CV11 4TQ

```
135
140 DEFPROCt($P%) CLS:$P%=CHR$131+CHR$141+$P%:PROCpr(1,$P%):PRDCpr(2,$P%):PRIN
TTAB(0,3)CHR$145 STRING$(39,"`"):PRINTTAB(0,22)CHR$145 STRING$(39,"`"):PROCpr(21
,"y<ESC> for MENU"):ENDPROC
145
150 DEFPROCse PROCfn:REPEAT:H%=0:PROCt($f%):PROCpr(11,"yEnter Keyword"):PROCpr
(20,"y<SPC><RTN>yto browse.").PRINTTAB(14,13),:$S%=FNin(12,31,132):PROCt("Search
ing "+$f%+" Index"):PROCh:L%=6:D%=HIMEM+W%-I%+40
160 IFFNyn(11,"Print it")K%=TRUE:CALL&A10
170 FOR N%=HIMEM+40 TO D% STEPI%:Z=INSTR($N%,$S%):IF Z AND L%<E% AND NOT K% PR
INTTAB(0,L%)$N%:L%=L%+1:H%=TRUE ELSE IF Z PRINT$N%:H%=TRUE
180 IF NOT K% IF L%=E% PROCco(20):L%=6
190 NEXT:IF K% CALL&A98:PROCt("Search"):K%=0
200 FOR X%=L% TO E%:PRINTTAB(0,X%)SPCI%.NEXT
210 IF NOT H% PROCpr(13,"r"+$S%+"gnot found")
220 UNTIL FNyn(20,"Quit Search"):ENDPRDC
225
230 DEFPROCld:PROCt("Loading"):PROCpr(12,"yEnter Index Name"):PRINTTAB(16,14),
:$f%=FNin(7,31,97):$P%="LOAD I."+$f%+" "+STR$~HIMEM:X%=0:Y%=&C:CALL&FFF7:W%=(!&2
FB AND &FFFF)-40:ENDPRDC
235
240 DEFPROCsv PROCt("Saving "+$f%):IF $f%=""PROCpr(12,"No Index to Save"):A=IN
KEY(200):ENDPROC
250 *AC.*.*
260 $P%="SAVE I."+$f%+" "+STR$~HIMEM+" "+STR$~(W%+HIMEM+40):X%=0.Y%=&C:CALL&FF
F7:*AC.I.* L
270 ENDPRDC
275
280 DEFFNyn(U%,$P%):LOCALans:*FX15,1
290 PROCpr(U%,"g"+$P%+" (Y/N) ? N"):VDU8:ans=(GETAND&DF):PRINTTAB(0,U%)SPC38.=
(CHR$ans="Y")
295
300 DEFPROCco(U%):*FX15,0
310 PROCpr(U%,"y<RETURN> to continue "):REPEATUNTILGET=13:PRINTTAB(6,U%)SPC30:
ENDPROC
315
320 DEFFNin(V%,loASC,hiASC):VDU23,1,1;0;0;0;:*FX202,32
330 LDCALK%,Z%.K%=0:?S%=&D
340 PRINTSTRING$(V%,".");" ",STRING$(V%+1,CHR$8),.*FX15,1
350 REPEAT.Z%=GET:IFZ%=127 AND K%>0 K%=K%-1.$S%=LEFT$($S%,K%):VDUZ%,46,8:GOTO3
80
360 IF Z%>loASC AND K%<V% AND Z%<hiASC K%=K%+1:$S%=$S%+CHR$Z%:VDUZ%:GOTO380
370 IF NOT (Z%=13 AND K%>0) VDU7
380 UNTIL Z%=13 AND K%>0:=$S%
385
390 DEFPRDCpr(U%,$P%):PRINTTAB(0,U%);SPC39:PRINTTAB((I%-LEN$P%)/2,U%)$P%;:ENDP
ROC
395
400 DEFPROCh:PRINTTAB(0,4)$HIMEM:ENDPROC
405
410 DEFPROCfn:IF$f%=""PROCld:ENDPRDC ELSE PROCt($f%)
420 IF FNyn(12,"Change Index") PROCld
430 ENDPROC
```

Sounds amazing

The final part of the utility for all Commodore music lovers – Synthesiser by ***Gareth Thomas***

The next thing to do is select which voices are to be filtered, 1-3. Typing *"123" (return)* will set all voices to be filtered. Finally you are asked if you wish filter sweep. If you type *"Y"* for yes you must enter the speed in the range 0-99.

Press F7 on the menu to return to the main menu. Next on the main menu is Effects, so press F3. The bottom line should now look like this, F1-Sync,F3-Resonance F5-Ring Mod F7-Exit.

Both *Sync* and *Ring Mod* will switch to the opposite state when pressed, i.e. if the *Sync* is already on (it should be white) It will turn off. For details on how to use Synchronisation and Ring Modulation see programmers reference guide page 463 and 207.

The *Resonance* (F3) is the depth that is given after passing through the filter. it has a range of 0-15, an just type in the value and press return.

On the main menu, next is *F5-Voice*. If you have been using the program up to now, you'll probably have noticed that all values typed in (except the filters) will have changed only Voice 1 on the far left. To change the parameters of other voices press *F5* and select your Voice 1-3 and select whether you wish it on or off.

Finally on the main menu press *F7* to hear your sound, and the new bottom line should look like this, F1-Duration, F3-Frequency, F5-Play, F7-Exit. The duration of the note is initially set at 1000 but this can be changed by pressing F1. Now enter a number 1-9999, (this number being only an arbitary value not representing any time scale).

Next on the menu is Frequency. Press *F3* and you will be prompted to enter the voice you wish to change, then you must type in the frequency. This is in the form shown on Page 161 of the user manual with a high and low value. Finally pressing *F5* will play the note, and again *F7* to return to the main menu.

If you've managed to follow everything so far, I've included an example to help you, it uses many of the features of the program.

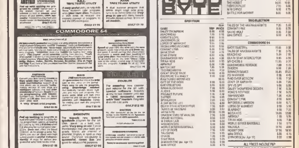
Example

AT = 1 DC = 2 S = 4 R = 4
Pulse Waveform H = 3 L = 128
Filters H Pass & L Pass
Cutoff H = 12 L = 1
Voice *1 only Resonance + 15
Fsweep = 25
Duration = 250

Try changing the waveform to *Noise* and slowing the sweep – you get a train type sound. With a lower frequency it sounds like a chugging beat.

```
5051 IFS$="L"ANDF1=0THENFL=FL+16 AC=55872 GOSUB3500 F1=1
5052 IFS$="H"ANDF2=0THENFL=FL+32 AC=55863 GOSUB3500 F2=1
5053 IFS$="B"ANDF3=0THENFL=FL+64 AC=55880 GOSUB3500 F3=1
5060 NEXT
5065 CL=14
5070 IFF1=0THENAC=55872 GOSUB3500
5080 IFF2=0THENAC=55863 GOSUB3500
5090 IFF3=0THENAC=55880 GOSUB3500
5100 IFS$="O"THENPOKEAD+24,(PEEK(AD+24))AND240 RETURN
5101 POKEAD+24,15+FL
5103
5104 REM SET CUTOFF FREQUENCY
5105 REM [CRP] [CRR] [RVS ON] [RVS OFF]
5110 PRINT"   CUTOFF?  "
5120 LN=4 GOSUB2500 IFM$="E"THEN5200
5121 IFLEN(M$)=1THEN5120
5123 S$=MID$(M$,1,1) IFS$<>"H"ANDS$<>"L"THEN5120
5125 IFS$="L"THENIFLEN(M$)>2ORVAL(MID$(M$,2,1))>7THEN5120
5127 IFS$="L"THENPOKE54293,VAL(MID$(M$,2,1)) CL=1684 GOSU
     B2700 GOTO5120
5130 FORLR=2TOLEN(M$) S$=MID$(M$,LR,1)
5150 IFASC(S$)<48ORASC(S$)>57THEN5120
5160 NEXT
5170 VL=VAL(MID$(M$,2,LEN(M$))) IFVL<0ORVL>255THEN5120 C
     U=VL
5175 IFVL<10THENM$=M$+"  "
5180 POKE54294,VL CL=1676 GOSUB2700:GOTO5120
5190
5191 REM SET VOICES TO BE FILTERED
5192 REM [CRP] [CRR] [RVS ON] [RVS OFF] [CRD]
5200 PRINT"   VOICE?    " LN=3 F1=0 F2=0 F3=0
5210 GOSUB2500 IFM$="E"THEN5340
5220 FORLR=1TOLEN(M$) S$=MID$(M$,LR,1)
5240 IFASC(S$)<48ORASC(S$)>57THEN5210
5250 IFS$="1"ANDF1=0THENF1=1 FT=FT+1
5260 IFS$="2"ANDF2=0THENF2=1:FT=FT+2
5270 IFS$="3"ANDF3=0THENF3=1:FT=FT+4
5280 NEXT
5290 POKEAD+23,(EC*16)+FT:LN=1 CL=1:CP=1:FORLR=1TO2
5300 IFF1=CPTHENPOKE56025,CL
5310 IFF2=CPTHENPOKE56029,CL
5320 IFF3=CPTHENPOKE56033,CL
5330 CL=14 CP=0 NEXT
5335 REM [3*CRR] [CRR] [RVS ON] [RVS OFF] [2*CRD]
5340 PRINT"   FSWEEP(Y/N)    " LN=1:GOSUB2500
5350 IFM$<>"Y"ANDM$<>"N"THEN5340
5360 IFM$="N"THENRETURN
5365 REM [3*CRR] [CRR] [RVS ON] [RVS OFF] [2*CRD]
5370 PRINT"   RATE?         " LN=2 GOSUB2500
5380 FORLR=1TOLEN(M$) S$=MID$(M$,LR,1)
5400 IFASC(S$)<48ORASC(S$)>57THEN5370
5410 NEXT
5420 SW=VAL(M$) IFSW<10THENM$=M$+" "
5430 CL=1096 M$=" "+M$:GOSUB2700 RETURN
5500
5800 REM PLAY SOUND
5801
5802 REM SET WAVEFORMS
5803 REM [CRP] [25*CRR] [RVS ON]
6950 PRINT"                          F5-PLAY"
7000 IFVO(1)THENPOKEAD+4,WV(1)+SY(1)+RM(1)
7001 IFVO(2)THENPOKEAD+11,WV(2)+SY(2)+RM(2)
7002 IFVO(3)THENPOKEAD+18,WV(3)+SY(3)+RM(3)
7010 FORDD=1TODP IFSWTHENGOSUB7800 DD=DD+25
7012 NEXT IFPEEK(203)<>64THEN7000
7013
7015 REM START RELEASE(RESET GATE)
7020 POKEAD+4,WV(1)-1 POKEAD+11,WV(2)-1 POKEAD+18,WV(3)-1
     POKES+22,CU
7030 POKE198,0:RETURN
7050
7450 REM [CRP] [CRP]
7500 PRINT"F1-DURATION F3-FREQUENCY F5-PLAY F7-EXIT"
7510 GETG$ IFG$=""THEN7510
7520 IFASC(G$)<133ORASC(G$)>136THEN7510
7530 IFG$=CHR$(136)THENRETURN
7540 ONASC(G$)-132GOSUB7700,7595,6950
7545 REM [3*CRP] [CRR] [RVS ON] [RVS OFF] [2*CRD]
7550 PRINT"   OPTION?      " GOTO7500
7555 REM [CRP] [12*CRR] [RVS ON]
7595 PRINT"              F3-FREQUENCY"
7596 REM [3*CRP] [CRR] [RVS ON] [RVS OFF]
7600 PRINT"   VOICE?    LN=1
7601 GOSUB2500 IFM$<"1"ORM$>"3"THEN7601
7602 VC=VAL(M$)
7603 REM [CRP] [CRP] [RVS ON] [RVS OFF] [CRD]
7605 PRINT"   FRQNCY?   " LN=4
7610 GOSUB2500 IFM$="E"THENRETURN
7620 S$=MID$(M$,1,1) IF S$<>"H"ANDS$<>"L"ANDS$<>"E"THEN7610
7630 FORLR=2TOLEN(M$) S$=MID$(M$,LR,1)
7650 IFASC(S$)<48ORASC(S$)>57THEN7610
7660 NEXT
7665 VU=VAL(MID$(M$,2,LEN(M$)))
7666 IFVU>255THEN7610
7680 S$=MID$(M$,1,1) IFS$="L"THENPOKEAD+((VC-1)*7),VU
7690 IFS$="H"THENPOKEAD+1+((VC-1)*7),VU
7693 GOTO7610
7699 REM [CRP] [RVS ON]
7700 PRINT"  F1-DURATION"
7701 REM [3*CRP] [CRR] [RVS ON] [CRD]
7705 PRINT"   DURATION?  " LN=4
7710 GOSUB2500 FORLR=1TOLEN(M$) S$=MID$(M$,LR,1)
7720 IFASC(S$)<48ORASC(S$)>57THEN7710
7730 NEXT DR=VAL(M$) IFDR=0THEN7710
7735 RETURN
7736
7760 REM FILTER SWEEP
7800 FORT=1TO255STEPSW:POKEAD+22,T NEXT RETURN
7850
8800 REM SET SID CHIP+MAIN VARIABLES
8900 AD=54272
8905 WV(1)=17 WV(2)=17 WV(3)=17 V=1 DR=500 VO(1)=1 VO(2)=0
     VO(3)=0
8906 CL$="                                        "
8907 PRINTCHR$(142)CHR$(8)
8910 FORL=0TO24 POKEL+AD,0:NEXT
8920 POKEAD+24,15
8930 POKE650,128:POKE198,0
8931 POKE53281,6:POKE53280,14
8935 POKEAD,195 POKEAD+1,16
8936 POKEAD+7,97 POKEAD+8,8
8937 POKEAD+14,135 POKEAD+15,53
8940 FORL=56136TO56150:POKEL,6:NEXT
```

```
8950
8960 REM SET UP SCREEN
8970
9015 REM [CLS] [LT GREEN]
9020 PRINT"___________|_________|_________"
9025 REM [CRP]
9030 PRINT"  AT=0  DC=0 | AT=0  DC=0 | AT=0  DC=0 |"
9035 REM [CRP]
9040 PRINT"            |           |           |"
9045 REM [CRP]
9050 PRINT"  SS=0  RL=0 | SS=0  RL=0 | SS=0  RL=0 |"
9055 REM [CRP]
9060 PRINT"____________|___________|___________|"
9065 REM [CRP] [LT.BLUE] [WHT] [LT.BLUE][WHT] [LT.BLUE] [WHT] [LT.BLUE]
9070 PRINT"  ⊓⊓⊓ ■ /\/\/ | ⊓⊓⊓ ■ /\/\/ | ⊓⊓⊓ ■ /\/\/  |"
9075 REM [CRP]
9080 PRINT"            |           |           |"
9085 REM [CRP]
9090 PRINT" /\/\  NOISE | /\/\  NOISE | /\/\  NOISE |"
9091 REM [CRP]
9092 PRINT"            |           |           |"
9094 REM [CRP] [GRY3] [LT.BLUE] [GRY3] [LT BLUE] [GRY3] [LT.BLUE]
9095 PRINT"  H=0   L=0   H=0   L=0    H=0   L=0   |"
9096 REM [CRP] [PUR]
9100 PRINT"____________|___________|___________|"
9105 REM [CRP]
9110 PRINT"            |           |           |"
9115 REM [CRP]
9120 PRINT"  SYNC  R.MOD | SYNC  R.MOD | SYNC  R.MOD |"
9125 REM [CRP] [LT.BLUE]
9220 PRINT"_______________________________|____|"
9225 REM [CRP] [WHT] [RVS ON] [RVS OFF]
9230 PRINT" FILTER H.PASS  L.PASS  B.PASS  ■ V1-SON■  |"
9235 REM [CRP] [LT.BLUE] [WHT]
9240 PRINT"                                ■          |"
9245 REM [CRP] [LT.BLUE] [WHT]
9250 PRINT" CUTOFF HIGH=0   LOW=0          ■ V2-OFF   |"
9255 REM [CRP] [LT.BLUE] [WHT]
9260 PRINT"                                ■          |"
9265 REM [CRP] [LT.BLUE] [WHT]
9270 PRINT"  VOICE  1   2   3   RANCE=0    ■ V3-OFF   |"
9275 REM [CRP] [LT.BLUE]
9280 PRINT"________________________________|__________|"
9285 REM [CRP]
9290 PRINT"             |           |                 |"
9295 REM [CRP] [RVS ON] [RVS OFF]
9300 PRINT" OPTION?■    | ■?        FSWEEP=0          |"
9302 REM [CRP]
9310 PRINT""
9320 RETURN
```



When I'm calling you

A selection of useful routines for the Amstrad CPC 464 from the keyboard of ***Brien Cadge***

This collection of machine code and cassette routines should be equally useful to both the Basic programmer and the machine code programmer To use the program, type in the Basic listing, or the assembly language listing if you have an assembler, and *Save* it The Basic program will warn you if you have made any errors in entering the *Data* statements, in which case you should recheck the listing

Among the things the program will allow you to do are to enter machine code into Ram, examine the contents of any piece of Ram set breakpoints in the code for testing subroutines, access the cassette motor, read in a cassette header and display relevant information from it, and write Basic data statements to tape

To run the program, once loaded into reserved Ram type *CALL 38000* The '>' character is the monitor's prompt for a command, the following commands are available.

BYE	—Returns to Basic, or the calling routine
WRITE	—Writes Basic data statements to tape
LIST	—Displays a section of Rom or Ram
START	—Turns on the cassette motor
STOP	—Turns off the cassette motor
READ	—Reads and displays information from a header block
FAST	—Sets the cassette to 2000 baud
SLOW	—Sets the cassette to 1000 baud
WIDTH	—Toggles between the 40 and 80 column display
INPUT	—Allows data to be entered directly into Ram
REGS	—Displays the contents of the Z80 registers
CALL	—Calls a machine code subroutine
BREAK	—Inserts a breakpoint
JUMP	—Jumps to a given address (used with Break)
HELP	—Displays a list of these commands

Some commands will ask for more information For the purpose two other prompts are used, the '#' character means a 16 bit Hex number is required. Four characters must be entered, so to input the number 20(decimal), (which is 14 hex), you would type *0014* The '$' character means an eight bit hex number is required, here only two characters are required.

Here is a description of the commands in more detail The *Write* command is used to record an ASCII file on tape, containing Basic data statements starting at Line 100 This file can be loaded as a normal Basic program, using *Load* "" This is very useful for anyone who writes a machine code program using an assembler, and wishes to produce a Basic loader program

The *Data* statements in the Basic listing for this program were produced using this command. The program will ask for the start address and the length of the code to be put into data statements. It will then ask for confirmation before producing the file.

The *List* command will ask for a start address. A screenful of data is displayed, the program automatically formating it to fit whichever size display is being used Pressing any key will continue the list, pressing *Esc* will return you to the command prompt

To analyse a program's header block, the *Read* command is used The cassette should be positioned as if to *Load* the program, and the *Play* button pressed. The monitor will read in the first header block it finds and display the following information The filetype byte character, as given the Cat command in Basic, the start address of the program, the length, and the execute address This is useful mainly for binary files you have saved, but have forgotten where they load and execute from.

The *Input* command allows you to enter data directly into Ram After supplying the start address, you can type in the data, each byte separated by the *Enter* key Press *Esc* when you've finished. This command can be used to enter small test programs, or to quickly change the contents of a memory address

The *Call* command is used to test subroutines, which should end with a normal *Ret* instruction, to return to the monitor On return, the values of the Z80 registers are saved, these can be displayed by the *Regs* command

To enter a breakpoint into a program, use the *Break* command. This asks for the address of the breakpoint and saves the contents of this address, after which it inserts a *RST 30* instruction. Using the *Jump* command to run the program under test, when a breakpoint occurs the monitor will halt the program, display the values of all the usable Z80 registers, and replace the original byte into the breakpoint address

All the commands are quite straight forward and do not really need further explanation. All commands must be entered as one word, in capitals The program sets the caps lock on when called so there should be no problem

Next week, how to add your own commands to the monitor and the remainder of the assembly listing.

BASIC PROGRAM

```
10 MEMORY 37999
20 FOR i=38000 TO 39625
30 READ a$:v=VAL("&"+a$):c=c+v
40 POKE i,v
50 NEXT
60 IF c<>183975 THEN PRINT CHR$(7);"DATA
 ERROR - Check listing!!!":STOP
70 CLS:PRINT"Monitor loaded, to call type
 CALL 38000"
100 DATA 3E,01,CD,0E,BC,21,96,94,CD,F6,95
,CD,65,BC,3E,90,32,E7,00,3E,FF,32
110 DATA EB,00,3E,C3,32,30,00,21,49,90,53
,31,00,C3,0F,9A,18,20,43,50,43,34
120 DATA 36,34,20,4D,4F,4E,49,54,4F,53,2F
,43,41,53,53,45,54,54,45,20,53,54
130 DATA 49,4C,49,54,59,20,0A,20,31,58,38
,34,20,18,0D,0A,0A,00,3E,00,CD,5A
140 DATA BB,3E,0A,CD,5A,BB,C9,7C,CD,F6,08
,7D,CD,F6,98,C9,F5,E6,F0,CD,3F,CB
150 DATA 3F,CB,3F,CB,3F,CD,F3,94,32,CE,98
,F1,E6,0F,CD,F3,94,32,CF,9A,C9,FE
160 DATA 00,38,03,C6,37,C9,C6,30,C9,CD,0B
,94,3A,CE,9A,CD,5A,BB,3A,CF,9A,CD
170 DATA 5A,BB,C9,DD,21,CC,96,02,34,D0,DD
,7E,00,FE,58,D0,3E,30,DD,77,00,DD
180 DATA 2B,10,EE,21,30,30,22,CC,9A,21,30
,31,22,CA,9A,C9,E5,C5,21,C6,9A,06
190 DATA 06,7E,CD,95,9C,23,10,F9,C1,E1,C9
,E5,C5,21,CB,9A,06,04,7E,CD,95,0C
200 DATA 23,10,F9,C1,E1,C9,06,0D,21,0C,9A
,11,00,9A,CD,0C,0C,30,7D,CD,23,95
210 DATA 2A,02,A2,3A,01,A2,B7,20,16,3A,00
,A2,FE,16,30,0F,B7,20,25,47,CD,32
220 DATA 95,3A,20,A3,B7,20,50,1B,19,CD,A0
,95,3A,20,A3,B7,20,52,C3,2A,00,A2
230 DATA 01,16,00,B7,ED,42,22,00,A2,E1,1B
,C3,C0,0F,0C,30,5D,C9,96,16,CD,41
240 DATA 95,CB,30,95,3E,C0,32,2B,A3,7E,CB
,0B,94,3A,DE,9A,CD,02,95,96,CF,9A
250 DATA CD,02,95,23,7B,FE,01,20,04,38,00
,18,02,3E,2C,C9,B9,95,10,0F,CB,00
260 DATA 95,CB,C1,95,0C,00,3E,FF,53,30,63
,C9,CB,92,0C,21,E6,95,CD,F6,95,C9
270 DATA 00,06,18,45,53,43,41,50,4D,21,10
,07,00,06,C0,D0,7E,B7,C8,CD,5A,BB
280 DATA 23,18,F7,CD,7B,B0,C0,81,BB,21,00
,A2,06,00,CD,06,B0,FE,7F,20,10,FE
290 DATA FC,B8,28,CD,36,00,FE,0D,2B,17,77
,23,04,18,E9,70,BF,A0,C3,58,0B,CD
300 DATA 90,BB,3E,10,CD,36,00,05,29,18,07
,58,00,77,3D,00,CD,58,00,CD,00,BB
310 DATA C9,58,20,77,23,3E,00,10,CB,FE,41
,38,03,D0,37,C9,06,30,C9,0D,7E,D0
320 DATA CB,47,96,CB,27,CB,27,CB,27,CB,27
,47,0D,7E,01,CD,47,96,D0,C9,0D,21
330 DATA 34,02,CB,51,96,67,DD,23,D0,2B,CB
,B1,96,6F,C9,11,0F,96,D0,21,F9,9A
340 DATA 21,00,02,18,06,29,0F,1A,7E,FF,20
,11,13,0F,30,F7,DD,23,D0,23,10,EA
350 DATA B7,20,00,13,23,18,EA,21,01,97,C9
,DD,6E,D0,DD,66,01,C9,42,59,45,00
360 DATA 57,53,49,54,45,D0,4C,49,53,58,D0
,53,54,41,52,54,D0,53,54,4F,50,00
370 DATA 53,45,41,44,D0,06,41,53,54,00,53
,4C,4F,57,00,57,49,44,54,4D,00,90
380 DATA 45,0C,50,00,49,4E,50,55,54,00,82
,45,47,53,00,43,41,0C,4C,00,42,52
390 DATA 45,41,4B,00,4A,55,4D,50,00,FF,FF
,64,97,7F,97,C5,90,F5,97,F0,97,13
400 DATA 00,01,99,0C,98,D0,98,69,99,63,99
,CF,99,1B,9A,30,96,7D,00,21,37,97
410 DATA CD,F6,95,CD,FF,95,CD,00,96,22,24
,A3,C9,21,40,97,CD,F6,95,CD,FF,95
420 DATA CD,6D,96,29,26,A3,C9,53,74,61,72
,74,20,61,64,64,72,65,73,73,96,20
```

```
430 DATA 23,00,4C,06,0E,07,74,60,30,20,28
,00,21,58,97,CA,F8,95,C3,0E,94,37
440 DATA 4B,61,74,2F,07,08,04,00,21,00,97
,CD,F6,95,C9,45,60,64,2A,0F,66,20
450 DATA 4B,6E,60,69,74,6E,72,2E,2E,2E,00
,00,00,CD,17,97,CD,27,97,21,C4,97
460 DATA CD,F6,95,30,24,A3,CD,CF,94,21,04
,97,CD,F6,95,2A,26,A3,CD,CF,94,21
470 DATA 0B,97,CD,F6,95,CD,FF,95,3A,04,A2
,F6,20,FE,79,20,03,C3,0E,9A,2A,26
480 DATA A3,22,02,A2,2A,26,A3,22 00,A2,CD
,52,99,C3,0E,9A,44,41,54,41,20,49
490 DATA 53,45 20 64,72 6E,60,20,23,00,20
,60,6E,72,20,23,00,0D,0A,49,73,20
500 DATA 74,68,69,73,2C,63,6F,72,72,65,63
,74,20,20,58,3F,4E,29,3F,20,00,CD
510 DATA 6E,0E,C3,0E,9A,CD 71,0E,C3,0E,9A
,21,A7,00,3E,32,CA,68,0C,C3,0E,9A
520 DATA 21,40,01,3E,19,1C,F3,00,00,11,00
,90,CD,77,0C,60,00,CD,0C,95,C3,0E
530 DATA 9A,22,02 A2,00,2A,02,A2,F5,21,72
,90,CD,F6,95,F1,E6,0F,C4,24,C0,5A
540 DATA 0B,21,D0,9D,CD,F6 95,00,66,36,00
,AE,15,CA,CF,94,21,0F,90,CD,F6,95
550 DATA 00,06,19,00,6E,10,CD,CF,94,21,9E
,90,CD,F6,95,00,6E,10,0D,60,1B,CB
560 DATA CF,94,21,A9,90,CD,F6,95,CD,70,0E
,C3,00,90,00,00,00,46,69,6C,60,30
570 DATA 70,49,70,65,20,00,00,00,53,79,61
,72,74,20,41,64,72,73,20,23,00,00
580 DATA 6A,4C,65,6E,67 74,60,20,20,20,20
,20,23,00,0D,0A,45,6E,74,72,79,20
590 DATA 41,64,72,73,20,23,00,00,0A,4F,40
,00,0A,C9,CD,11,0E,20,00,3E,01,CD
600 DATA 0E,0C,C3,0E,9A,3E,02,18,F6,CD,17
,97,21,4F,99,CD,F6,95,CD FF,95,3A
610 DATA 04,A2,FE,31,20,07,3E,00,32,29,A3
,18,02,3E,FF,32,29,A3,CD,11,0E,32
620 DATA 28,A3,CD,0E,00,06,18,2A,24,A3,CD
,CF,94,3E,20,CD,5A,00,CD,5A,00,CD
630 DATA 04,00,3A,28,A3,FE,01,28,02,00,10
,3A,29,A3,07,20,16,CD,06,07,65,CA
640 DATA 00,09,F5,7E,32,28,A3,F1,CA,0C,09
,F1,CD,0C,09,18,09,CD 09,99,F5,CA
650 DATA 93,07,10,CD,3A,28,A3,CD,FD,94,23
,22,24,A3,3E,20,CD,3A,09,10,CA,C2
660 DATA C4,94,E1,10,60,CD,00,00,FE,FC,20
,9E,C3,0E,9A,4C,69,73,74,20,52,4F
670 DATA 4D,20,76,31,78,20,6E,72,20,52,41
,4D,20,78,32,70,20,3F,00,21,A0,96
680 DATA CD,C4,94,7E,FE,FF,20,09,CA,F6,95
,23,CD,C4,99,1D,F2,CD,C4,94,C3,0E
690 DATA 9A,CD,17,97,21,06,99,CD,F6,95,2A
,20,A3,CA,CF,94,21,CA,97,CD,F4,95
700 DATA 8E,99,95,3A,04,A2,FE,20,28,11,0E
,23,04,02,CD,31,04,3A,24,A3,77,23
710 DATA 22,24,A3,18,09,C3,0E,9A,44,69,74
,20,40,6E,43,20,74,6F,20,66,69,6F
720 DATA 6F,78,60,00,00,00,20,30,20,30,00
,06,07,21,00,95,00,21,2E,A3,CD,F6
730 DATA 95,23,E5,00,66,01,00,66,03,CD,CF
,94,E1,00,23,00,23,CD,C4,94,10,E8
740 DATA C3,89,90,E1,73,30,A3,E0,45,2E,A3
,CD,53,30,A3,22,32,A3,00,22,34,A3
750 DATA C0,22,36,A3,F5,E1,22,2C,A3,0A,30
,A3,23,23,23,30,A3,C9,CD,17,97,5A
760 DATA 04,02,FE,2A,20,06,C0,20,9A,CA,F5
,99,C3,0E,00,30,24,A3,E9,C9,21,59
770 DATA 1A,C0,F6,95,CD,FF,99,CD,60,96,7E
,32,3C,A3,3E,F7,77,22,30,A3,C3,0E
780 DATA 9A,CA,F3,99,E1,20,3A,A3,3A,3C,A3
,77,21,67,9A,CA,F6,99,C3,CF,99,41
790 DATA 74,30,41,64,72,73,20,23,00,07,00
,00,00,1D,20,42,52,45,41,4B,50,4F
800 DATA 49,4E,54,20,10,0A,0A,00,00,CD,17
,97,30,04,A2,FE,20,20,03,C3,06,9A
810 DATA 2A,24,A3,E9,3E,3E,CD,5A,00,CD,FF
,95,30,04,A2,07,20,F2,CD,7F,96,E9
820 DATA 41,46,20,00,42,43,20,00,44,45,20
,00,48,4C,20,00,49,58,20,00,49,59
830 DATA 20,00,53,50,20,00,40,4F,4E,4D,44
,41,54,41,20,44,41,54,41,20
```

```
10 ;
20 ; CPC464 Monitor and Cassette Utilities
30 ;
40         ORG  38000
50         ENT  $
60         LD   A,1
70         CALL #BC0E           ;Set up mode 1
80         LD   HL,INTR
90         CALL MESPT
100        CALL #BC65           ;Initialize cassette
110        LD   A,0
120        LD   (46311),A       ;Set shift lock off
130        LD   A,255
140        LD   (46312),A       ;Set caps lock off
150        LD   A,#C3           ;Patch in Jump Block
160        LD   (#0030),A       ;for Break Points
170        LD   HL,RESTR        ;in RST 30 vector
180        LD   (#0031),HL
190        JP   LOOP
200 INTR   DEFB 24
210        DEFM " CPC464 MONITOR/CASSETTE UTILITY
220        DEFB 164
230        DEFM " 1984 "
240        DEFB 24,13,10 10 0
250 LFEED  LD   A,13            ;Linefeed screen
260        CALL #BB5A
270        LD   A,10
280        CALL #BB5A
290        RET
300 HHPRG  LD   A,H             ;Print 16 bit value
310        CALL HEXPR            in HL as HEX chars
320        LD   A,L
330        CALL HEXPR
340        RET
350 HEXST  PUSH AF              ;Store HEX chars for
360        AND  240             ;8 bit value in A
370        SRL  A
380        SRL  A
390        SRL  A
400        SRL  A
410        CALL CVASC
420        LD   (HXHI),A
430        POP  AF
440        AND  15
450        CALL CVASC
460        LD   (HXLW),A
470        RET
480 CVASC  CP   10
490        JR   C,DIG
500        ADD  A,55
510        RET
520 DIG    ADD  A,48
530        RET
540 HEXPR  CALL HEXST            Print 8 bit value
550        LD   A,(HXHI)         in A as HEX chars
560        CALL #BB5A
570        LD   A,(HXLW)
580        CALL #BB5A
590        RET
600 LNINC  LD   IX,LINE+2        Increment line number
610 LNLOP: INC  (IX+0)           counter by 10
620        LD   A,(IX+0)
630        CP   58
640        RET  C
650        LD   A,"0"
660        LD   (IX+0),A
670        DEC  IX
680        JR   LNLOP
690 LNINT  LD   HL,#3030        ;Initialize line number
700        LD   (LINE+2),HL     ;for DATA lines to 100
710        LD   HL,#3100
720        LD   (LINE),HL
730        RET
740 DATCS  PUSH HL              ;Print DATA to cassette
750        PUSH BC
760        LD   HL,TXDAT
770        LD   B,6
780 TXLP   LD   A,(HL)
790        CALL #BC95
800        INC  HL
810        DJNZ TXLP
820        POP  BC
830        POP  HL
840        RET
850 LNPRT  PUSH HL              ;Print line number to cassett
860        PUSH BC
870        LD   HL,LINE
880        LD   B,4
890 LNPLP  LD   A,(HL)
900        CALL #BC95
910        INC  HL
920        DJNZ LNPLP
930        POP  BC
940        POP  HL
950        RET
960 BASSV  LD   B,8             ;Length of filename
970        LD   HL,FNAME        ;Address of filename
980        LD   DE,BUFER        ;2K of buffer for OS
990        CALL #BC8C           ;Open cassette for Output
1000       JR   NC,ERROR1
1010       CALL LNINT           ;Initialise line number
1020       LD   HL,(DADRS)      ;Get start address
1030 BCLP  LD   A,(BYTLT+1)
1040       OR   A
1050       JR   NZ,GTHLN        ;>22 bytes left
1060       LD   A,(BYTLT)
1070       CP   22
1080       JR   NC,GTHLN        ;>22 bytes left
1090       OR   A
1100       JR   Z,CLSOT
1110       LD   B,A
1120       CALL UNDLN           ;<22 bytes left
1130       LD   A,(ESCP)        ;Check for ESC flag
1140       OR   A
1150       JR   NZ,ERROR1
1160       JR   CLSOT           ;Close cassette
1170 GTHLN CALL OVRLN           ;Output 22 Hex values
1180       LD   A,(ESCP)        ;Check for ESC key
1190       OR   A
1200       JR   NZ ERROR1
1210       PUSH HL
1220       LD   HL,(BYTLT)
```

Arcade Avenue



Games choice

On the day we received our first Games Wizard entry for the BBC B from Martin Geddes of Staines, who has scored 1,016,500 on *Elite*, 49,500 on *Jet Pac* and 548,820 on *Chuckie Egg*, we also received the first, not entirely unexpected, 'Mr Angry' letter "I would like to criticise your choice of games in the Wizard competition," writes J A Fraeman of Leeds 'I own a Spectrum and consider myself to be pretty nifty on both *Jet Pac* and *Manic Miner* yet they only appear on other machines. My latest witnessed score on *Jet Pac* is 536,925, I have had greater scores, but get bored of playing the same game for hours on and This score is achieved by knowing where to stand!"

Well, I'm afraid you've already partly answered the reason why we avoided those games. Spectrum owners have had nearly two years longer to practise *Manic Miner*, for instance than Amstrad owners and as dedicated as we are at *Popular* we aren't prepared to stand around the entire weekend watching someone of 2000 times around the clock just because they know "where to stand'

Seriously, though, you wouldn't believe the heartache and arguments we went through to decide on which games to include For obviously reasons we had to try to avoid those which, once completed, just end A real problem is those that are marked on a percentage scale that reflects something abstract, such as the number of locations visited, because there is no way of deciding which is the more skilful between a low and a high percentage – a decision that immediately cut out a lot of the latest and best Ultimate releases.

We also had to leave out bug-ridden efforts like *Daley's Decathlon* or *Jet Set Willy*, and we tried to avoid those that fall into the category of this about them Regarding machine like the Spectrum, which are at the forefront of new software innovation, although we felt we had to include a good alien blast and a platform game, it would have been an injustice to stick with old classics at the expense of the latest and best games such as *Technician Ted* and *Starstrike* I hope you can begin to appreciate why it was impossible to please everyone with our final choice, and don't forget you don't have to be a wizard at all three games for your machine in order to enter.

Anyway, sticking with *Technician Ted* for the minute – which, if you haven't seen it, has the most amazing loading screen I've ever seen – here are some tips for the game straight from the horse's mouth of Hewson Consultants themselves to get you started. "*Technician Ted* has a full event processor (no, I don't know what that is either) so that rooms change as the game progresses If a room looks easy or empty then it is probably not time to attempt it. The order in which tasks must be completed is roughly the same as might be expected during an ordinary working day (sic!) The game can be completed within the given limit, but time is of the essence

"Many rooms have been timed so that the skilled player can pass through without pausing provided the correct moves are made Similarly, it can sometimes be better to deliberately lose a life when a task is completed rather than follow a tortuous path back to the exit Collision detection is precise so the starting position of jumps is extremely important. Use of the *Pause* facility will help here It can sometimes help to jump vertically and press either left or right whilst Ted is in the air "

Sounds like there's enough to keep people busy for a long time and it may be a good buy for CJ Smith of Westbury who, having finished *JSW*, *Underwurlde*, *Cavelon*, *Beach Head*, *Manic Miner*, *Sabre Wulf*, *Atic Atac* and *Ant Attack*, wants to know whether I can tell him of any games that would be hard to beat (I expect to see your name in the Wizard competition CJ!) At the time of writing no one has come close to finishing all 21 tasks in the game, the closest being 15 tasks and if anyone does finish it soon then this Hewson would like to hear from you. Incidentally, CJ, you could also try looking at *Gyron* by Firebird which is said to be mean

The good news from Hewson is that a follow up *TT* is planned sometime soon. And also, for Commodore owners a game called *Gribbley's Day Out* which, as well as being very cute, has the smoothest multi-directional scrolling I can remember seeing – the sort of touch that most people will never notice as long as its well done, but could ruin a game if done poorly We can also look forward to another game in the *Dragontorc/Avalon* mould.

The other week someone asked how to get 100% on *Pyjamarama* and the answer comes from Douglas Grant of Leven, Fife who finished with 100% and 3183 paces on the CBM 64 way back on 27th December. The trick is to make sure that all the objects have been moved from their starting places when you finish Douglas also wants us to know of his unbeaten run of 115 matches on level 9 of *International Soccer* with a highest win of 9-0 Sign him up someone!

Staying with football games, Stuart Young of Glasgow beat the computer in Ocean's 'excellent game *Match Day*' on 8th December winning 4-2 in the quarter final, 5-2 after extra time in the semi and "triumphing 3-2 in a hard fought final" Stuart also has these high scores – *Full Throttle*, 1st on every circuit on a two lap race ("I find it easier and faster to take bends on the outside and never use the brakes"), *Pole Position*, 64,250, *Stop the Express*, 10,030; *Daily's Decathlon*, 449,145 and 580,565 (without cheating)

Let's finish on a light note – Mike Bishop of Cardiff writes, "I have wandered around in *Atic Atac* eating food, unlocking doors, bopping nasties ad infinitum Could you please give me some indication of what to do with the stupid key sections after I've picked them up as taking them to the front door door doesn't get me anywhere Is there some subtle nuance which I haven't grasped or am I being incredibly thick?" No comment Mike but try putting the key pieces in the right order

Tony Kendle

We are searching for the top UK computer games player – the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games – scheduled for release in the autumn.

Here's how it works

Study the table below and look at the column for the machine you have – these are the games you'll need to master. Send your high scores in on the form below, making sure that your scores are authenticated by a responsible individual signing the form Any score achieved using technical short-cuts – such as infinite lives Pokes – will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September, the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our top secret games.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Splat!
Game 2	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

Game Wizard Entry Form

Micro

Game 1 score

Game 2 score

Game 3 score

Name

Address

Your signature

Witness's signature


BOSS
Starting a business and know about balance sheets profit cash flow bank loans
ENTREPRENEUR
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A nice little earner

***Graham Taylor** talks to the mind behind Minder, the game*



You'd be forgiven for thinking that all that was involved in the production of a computer game based on a popular film or TV program was the handing over of a large sum of money for the right by the software house, followed by a quick rummage in the basement to see what item of dross could be tarted up and shot out into the market place as quickly as possible for some instant bucks before the reviews come out.

Movie spin-offs are frequently so dire that they are almost more feared in the *Popular* offices than platform games with names that alliterate. But there are exceptions – games that really do seem to have been created with the mood and style of the original in mind. *Ghostbusters* was one and it looks as though *Minder* will be another.

But how does a programmer turn film into game? What does he do if someone came up with the idea of a game based on the immortal, inimitable *Minder*? A dreary road chase game? Help Arthur Daley collect the 12 cases of stolen goods and put them in his lock-up, but watch out for the falling plain clothes branch? Thankfully, Don Priestly, programmer of *Minder*, didn't think any of the above were a good idea.

I have, although I wasn't consciously aware of it before interviewing him, always been a fan of Don Priestly's work in particular. I always loved a management game he did called *Dictator* where through bribery, corruption and maglomania you ran a small banana republic as long as you could. *Minder* can be thought of as a sophisticated East End version of *Dictator*.

Don is a whizz middle aged person with a beard rather than a whizz kid. He has a manner you might call businesslike with a smidgen of mad professor. He says of the *Minder* game, "Looking at the program on TV I felt I could create a reasonable or even good program and on balance I think it has turned out to be good." From an hour or so looking at it I would say it is better than good, but then Don just isn't the sort of person who could say Mega! with a straight face let alone a exclamation mark.

Was Don a *Minder* fan prior to writing the game? "Well, to be honest, I don't watch TV much but if *Minder* was on I did stop to look at it. When developing the game I watched every episode I could and videoed them to view them again to try to get the right feel."

What conclusions had he drawn? "It seems to me there are several ingredients in the shows I had to get into the game: firstly it is about people and not just cardboard cut-outs, secondly it has a very distinct series of locations and language, and finally it had to be funny."

The game has essentially three locations, the Winchester club where dealers, assorted low lifes and, on occasion, Mr Chisholm can be found, the lock up where the goods Arthur Daley buys and sells are kept and various dealer locations where yet more deals are made. "I decided against the car lot because all that could happen there was the buying and selling of cars and I thought that would become boring."

One thing that Don's specifications for the game meant was that the game should be populated by many 'characters', people who were always around adding atmosphere. Since the game also had to be graphically interesting, there was the question of how to show lots of different people who aren't simply featureless stick insects. "I wanted people's faces and then hit upon the idea of a sort of rogues gallery." In practice what this means is that when you go to the Winchester club you see an assortment of different faces like a series of wanted posters.

"The routine for drawing faces is set for the faces of specific people like Terry and the dealers but can create randomly generated faces for other people." An important feature of the game is the 'real time' which means that different people will be found at different locations at different times.

The question of dialogue is a major form of pseudo East End language which marks the series. For example, a dealer offered me a nice line in coats for about £80 each and Don invited me to haggle with him. I thought of the most non-standard round about way of expressing the idea, something like 'cor, leave it out, squire, make it £45'.

To my amazement, the character came back with a better offer having understood my input.

The same thing works in reverse if you try to sell something – in a sense you bring the style of the TV program to the game. How does it work? It took me a while to figure it out and I'm not going to spoil it for you, but let's just say it doesn't require the most sophisticated language analysis routines known to mankind.

But what about Terry? In the program all he really gets to do is lug stuff you've bought and sold about and occasionally protect you for a small amount of money. Hadn't Don diminished Terry's role somewhat? "I watched the program over and over again and that's all Terry does. Arthur is always the leader, he's the entrepreneur. Terry only acts when Arthur has gone over the top or needs rescuing. He isn't really very motivated otherwise. The reason his role seems bigger is because of the way it's acted, subtle looks and glances that make the program great, but are impossible to program."

As the game was developed, it has been changed here and there. "The main thing has been simplification. In earlier stages there were more complex haggling episodes, for example, you had to agree a price for Terry to work for you, now he always gets the same amount.

"I changed it simply because the game plays better; sophisticated isn't always more fun."

In terms of the way it reflects the TV program and playability, the finished game is better than anyone could have hoped for and being able to type in things like 'leave it out, squire' and not get 'I'm sorry I don't know what you mean' is bliss.

I'm out out to get a box of big cigars and a funny hat.

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Gems of stardus on Amstrad CPC 464. How do I get across the pool and pit and where is the matchbox? James Canning, 72 Calilun Drive, Knightswood Glasgow

Valkyrie 17 on Spectrum 48K. I can not get past the border guard and into Carpathia, but can help fellow adventurers stuck further back David Thomas 38 Queens Road Jesmond Newcastle-upon Tyne

Eureka on Spectrum 48K How do I get past the Brachosaurus in the prehistoric age Please! J White 12 Crossways Camphill, Newport Isle-of Wight

Eureka on Spectrum How do I get past the brachiosaurus in pre-historic times? Dean Brown 19 Hitchin Close Harold Hill Romford Essex RM3 7EG

Jewels of Babylon on Amstrad How do I get from the beach area? Of what significance is the boulder? Dominic Frost 20 Badgers Croft Eccleshall Staffs ST21 6DS (Eccleshall 850 298)

Return to Eden on Spectrum How do you avoid being burnt at the start – I have gone down the molehill? Peter Craven, 81 Susman Avenue Blairgowrie Randburg 2194. Transvaal South Africa.

Altair 4 on Commodore 64. Can any one help please! R C Hall 8 Station Road, Stanford-le-Hope Essex SS17 0N2

Jewels of Babylon on Amstrad. How do I get past the cannibals village? Philip Lewin. 89 Whitwande Road High Wycombe Bucks HP12 3EL

The Hulk and Spiderman on Spectrum. Have done 84% of the Hulk – where do I find any enemies? Have made 30% of Spiderman – how do I get past the fan? David Rives 40 Cleeston Street, North Kelvinside, Glasgow G20 8QX.

Ship of Doom on Spectrum. How do you get the body from the ice and how do you get the key from the case? Mike Bishop Flat 310 Llys Tal-Y-Bont Halls Mlandy Cardiff Wales

Adventureland on Vic20 How do you get the fish from the lake without them dying? How do you find the medicine? Richard Wallace 30 Bowe-on Avenue Edenthorpe Doncaster S Yorks

Dungeon Adventure on Commodore 64. How do you get past the giant rat and how do you get permanent light source? D R Hawthorn, 3 Hanger Road, Tadley Basingstoke Hants RG26 6QQ

Urgan Upstart on Spectrum. Help please! I've got to the plane I've even managed to take off, but I always crash! Why is this the way out? John Cook 39 Wickenby Crescent Lincoln LN1 3TJ

Moutains of Ket on Spectrum. How do you pick up the dice and the lined beard? Stuart Walsh 8 Lannock Jackman Estate Letchworth Herts SG6 2PU

Spiderman on Commodore 64. How do you make web fluid? Please help! Aaron Trinder 80 Gascony Avenue London NW6 4ND

The Pen and the Dark on BBC How do I buy items? How do I open the door which requires the card? How do I get the vehicle, cable etc? Fraser Smart Traveleys Largo Road, Levin Fife, Scotland

Lords of Time on BBC. How do you stay warm on level 2? How do you get the jumble of wood? How do you get past the mammoth? Carl Beasley 18 Badgers Croft Eccleshall, Staffs

Twin Kingdom Valley on Commodore 64. After you have come out of the castle and the drawbridge goes up what next? Stephen Tipling, 131 Church Road, Worle, Weston super Mare Avon.

Lords of Time on Spectrum. Where do you find the gold nugget and the fire sharp sword? Graham Everest 14 Springfield Avenue Chesterfield, Derbyshire

Jewels of Babylon on Amstrad. How do I get past the cannibal's village and what do I do with the lion? B W Sandham 14 Edwalton Court Mansfield Notts

Adventure Quest on Commodore 64. I am The Swan and I can't get in the black swan. Graham Stilwell 72 Mill Road Haverhill Suffolk

Ship of Doom on Commodore 64. I can't get the key from under the cover. I'm completely stuck. E E O Bryan 2 Bridge Path, Madeley Nr Crewe Cheshire

Secret Mission on Atari I have mapped out ten rooms but I can't find the keys for the buncea on the chair What is sufficient authorisation? Russell Hubner Selwyn Lower Station Road Henfield West Sussex

Lords of Time on Amstrad. How do I change time zones? What do I do with the red porsche? How do I get the coin from the tooth fairy? Please help A J Ashwood c/o Air Traffic Control, RAF Gatersloh BFPO 47

Twin Kingdom Valley on Commodore 64. What do I do when I have 1024 points? Darren Owen 80 Partridge Close Chelmsley Wood Birmingham

Heroes of Karn on Spectrum. Where do I find Khadim? How do I get the wand? J C Smith 43a Curror Street, Selkirk Selkirkshire Scotland.

Inferno on Spectrum What signal is needed? R Wells 1 Daffodil Avenue Brentwood Essex

Tower of Despair on Spectrum. How do I get through the destiny stone on the shifting plain? How do I get past the angel of death? J C Smith 43a Curror Street Selkirk Selkirkshire

Vic 20

1	(—)	Wizard and Princess	(Mel. House)
2	( )	Mikey the Snickle	(Firebird)
3	(6)	Doodlebug	(Mastertronic)
4	(—)	Psycho Shopper	(Mastertronic)
5	(3)	Phantom Attack	(Mastertronic)
6	(—)	3-D Maze	(Mastertronic)
7	(1)	Vegas Jackpot	(Mastertronic)
8	(—)	Kwazad Zapper	(Mastertronic)
9	(—)	Snake Bite	(Firebird)
10	(—)	New York Blitz	(Mastertronic)

(Compiled by Websters Software)

Commodore 64

1	(5)	Booty	(Firebird)
2	(8)	Chiller	(Mastertronic)
3	(—)	Microsoc Triple Pack B	(Mastertronic)
4	(10)	Azimuth Head Alignment Tape	(Interceptor Micros)
5	(1)	Mega-Hits	(Beau Jolly)
7	(—)	1985	(Mastertronic)
8	(8)	Ghostbusters	(Activision)
9	(6)	Big Mac Mad Maintenance Man	(Mastertronic)
10	(—)	Danger Mouse in Double Trouble	(Thorn EMI)

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Spectrum

1	(8)	Everyone's a Wally	(Microgen)
2	(—)	Microsoc Triple Pack A	(Mastertronic)
3	(3)	Wizards Lair	(Bubble Bus)
4	(6)	Moon Cresta	(Incentive)
5	(5)	Booty	(Firebird)
6	(—)	Finders Keepers	(Mastertronic)
7	(—)	Pole Position	(Atari)
8	(1)	Bruce Lee	(US Gold)
9	(6)	Raid Over Moscow	(US Gold)
10	(4)	Mega-Hits	(Beau Jolly)

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BBC B

1	( )	Football Manager	(Addictive)
2	(—)	Scrabble	(Leisure Genius)
3	(6)	Spectipede	(Mastertronic)
4	(—)	Duck	(Firebird)
5	(3)	Castle Quest	(Micropower)
6	(8)	Star Storm	(Mastertronic)
7	(4)	Manic Miner	(Software Projects)
8	(3)	Ultron	(CLM)
9	(5)	White Knight Mk 12	(BBC Publications)
10	(—)	Acid Drops	(Firebird)

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ATARI

1	(8)	Compilation Tape 1	(English)
2	(7)	Computer War	(Atari)
3	(7)	Sub Commander	(Thorn EMI)
4	(3)	F15/Strike Eagle	(Centresoft)
5	(2)	Colossus Chess	(English)
6	(4)	Encounter	(Hi-Tech)
7	(5)	Attack of Mutant Camels	(Llamasoft)
8	(9)	O Reillys Mine	(Centresoft)
9	(—)	Gridrunner	(Llamasoft)
10	(—)	Donkey Kong	(Atari)

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C16

1	(4)	Games Tape 3	(Melbourne House)
2	(2)	Roller Kong	(Melbourne House)
3	(7)	Games Tape 1	(Melbourne House)
4	(2)	Stellar Wars/Blitz	(CBM)
5	(6)	Berks	(CRL)
6	(6)	Crazy Golf	(CBM)
7	(8)	Vegas Jackpot	(Melbourne House)
8	(1)	Williamsburg Adv	(Mirrorsoft)
9	(5)	Flight 015	(Craig Communications)
10	(10)	Spiderman	(Adventure International)

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Amstrad

1	(2)	Sorcery	(Virgin)
2	(1)	Mouse Money	(Amsoft)
3	(4)	Fighter Pilot	(Digital Integration)
4	(—)	Grand Prix Driver	(Amsoft)
5	(—)	Mouse Typing	(Amsoft)
6	(—)	Flight Path 737	(Anirog)
7	(3)	Mini Office	(Database Publns)
8	(—)	Code Name Mat	(Amsoft)
9	(—)	Hunchback	(Ocean)
10	(—)	Classic Adventure	(Amsoft)
10	(9)	Dark Star	(Design)

(Compiled by Websters Software)

Event	Dates	Venue	Admission	Organisers
Northern Computer Show	April 16-18 10.00am-6.00pm	Belle Vue Manchester	Free in advance from organisers	Bolex Exhibitions 01-643 8040
Apple 85	May 9-10 10.00am-6.00pm May 11 10.00am-4.00pm	Novotel London W6	Free in advance from organisers	Database Publications 061-456 8383
Electron & BBC Micro User Show	May 9-11 10.00am-6.00pm May 12 10.00am-4.00pm	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061-456 8040
London Festival of Computing	April 9-20	Various. Contact organisers	Various. Contact organisers	London Festival of Computing 01 240 5326
Communication Aids for the Handicapped International Conference 85	April 17-19	Sheffield Polytechnic College	Residential, £30 Half-day session, £5	E. Hudson 0742 665274

Readers' Chart No 19

1	(3)	Alien 8 *(Spectrum)*	**Ultimate**
2	(1)	Knight Lore *(Spectrum/C64)*	**Ultimate**
3	(4)	Ghostbusters *(Spectrum/C64)*	**Activision**
4	(–)	Everyone's a Wally *(Spectrum/C64)*	**Mikro-Gen**
5	(–)	Bruce Lee *(Spectrum/C64)*	**US Gold**
6	(–)	Manic Miner *(Spectrum/C64/Amstrad/MSX/Dragon/)*	**Software Projects**
7	(–)	Sorcery *(C64/Amstrad)*	**Virgin**
8	(2)	Soft Aid *(Spectrum/C64)*	**Various Artists**
9	(5)	Football Manager *(Spectrum/C64/BBC/Electron/Oric/Atmos/Dragon/Vic20/ZX81)*	**Addictive Games**
10	(–)	Technician Ted *(Spectrum)*	**Hewson**

Winning phrase No 18: "8 trikes lost in sleet" from Justine Freeman, Bothwell, Leeds, who receives £25. Other contenders who narrowly missed include "Look, the guests are singing" from S MacCowan of Kendal and "His alien's got 6 toes" from Jason Cooper, New Malden, Surrey

Now voting on week 21 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to. Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 21 closes at 2pm on Wednesday April 17 1985 Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed

Name .... **My top 3: Voting Week 20**

Address .... **1**..

.... **2**..

.... **3**..

My phrase is: ....

New Releases

DIFFERENT

What do you get if you cross *Mastermind* with *Elite*, and add a dash of *The Times* crossword? Not, as you might expect, "Icelandic inquisitor strikes upon smoky exclamation", but the newest Spectrum release from Melbourne House, STARION

David Webb, author of two Melbourne House books and latest in the line of Oxbridge programmers, has produced a game combining what are possibly the best shoot-em up line graphics in the business with, of all things, anagrams and history "You are, sir, a brave man," I say as I'm not convinced that these bedfellows lie particularly well together.

The scenario is that 'the aliens' have been messing about with history – altering historical tecte. Your task is to warp from time-zone to time-zone eapping enemy craft (in a very smooth scrolling and engaging manner), collecting their cargo of letters Each time zone has a different anagram to solve, which is the answer to a particular historical question within the time-grid you are in (an arrangement of 3×3 time zones) In essence, you go on solving various anagrams and questions over 243 time zones

Technically brilliant, this game might not be a winner, but it's certainly different

Program *Starion*
Price *£7 95*
Micro *Spectrum 48K*
Supplier *Melbourne House*
Castle Yard House
Castle Yard
Richmond
TW10 6TF

MEDIOCRE

There was a time when Amstrad owners were justifiably worried about software support for their new machine, but with programs of the quality of *Masterfile* and *Sorcery* turning up I would say that time is now officially over Of course, together with the supremely excellent comes the supremely average, and *Gauntlet* (together with *Killer Gorilla* on Side B) falls very solidly into the latter category.

Both have been previously released by Micropower for Acorn micros, and because the CPC 464 uses the same graphics chip (the 6845) they have 'reproduced the outstanding graphics almost exactly' Outstanding? Two years ago on an inferior machine maybe Today, no

What you get for your £9.95 are two arcade clones – *Donkey Kong* and *Defender* – that aren't actively bad (although the true graphic capabilities of the machine aren't touched), but just plain mediocre

Arcade fanatics can get better elsewhere, Alligata's *Defend or Die* for instance – so the only market for this package is the 'serious' programmer that wants some occasional light relief at a cheap(ish) price. Not recommended for seasoned campaigners though

Program *Gauntlet*
Price *£9 95*
Micro *Amstrad CPC 464*
Supplier *Micropower*
Northwood House
North Street
Leeds LS7 2AA

FLOPPY BUDGET

There's this continuing problem with Einstein Software – whilst there is quite a bit about it's all very expensive This is because you have to buy everything on 3½" floppys

On the other hand having things on disc does tend to make all those home accounting packages a little more easy to use, almost useful in fact. A case in point is *Home Budget* from Euma.

The idea is that you create a database of monthly incomes and outgoings accounts to preset or self defined headings These can be updated every month and results displayed as monthly and yearly totals or as bar charts

The idea is that all this will help you plan your financial life and generally become a more financially stable person. Previous taped-based versions of this and similar programs were, to my mind, rendered useless by the cumbersome process of loading the things from tape It just wasn't worth the bother, unless you were incredibly well disciplined, in which case you probably kept written records anyway

On disc, loading in a couple of seconds, it all become feasible, you might actually use the program as it is intended. I have to say that, personally, I still don't even fill in my cheque stubs

Program *Home Budget*
Price *£19 95*
Micce *Einstein*
Supplier *Tatung UK*
Stafford Park 10
Telford
TF3 3AB

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Black Phoenix	Ad	Amstrad	£8.95	James Paton
The Tomb of Kuslak	Ad	Amstrad	£6 95	Intrigue
Jetboat Jack	Arc	Amstrad	£8 95	English
Confuzion	S	Amstrad	£8.95	Incentive
Fishing	S	Amstrad	£7 95	Illusions
Artwork	Ut	Amstrad	£8.95	Kuma
Wizardore	Arc	BBC B	£7 95	Imagine
Confuzion	S	BBC B	£6 95	Incentive
Doughboy	Ad	Commodore 64	£8.95	US Gold
Ultima III	Ad	Commodore 64	£9 95	US Gold
Bounty Bob	Arc	Commodore 64	£9.95	US Gold
Conan	Arc	Commodore 64	£9.95	US Gold
Grogs Revenge	Arc	Commodore 64	£9 95	US Gold
Quasimodo	Arc	Commodore 64	£9 95	US Gold
Super Pipeline II	Arc	Commodore 64	£8.95	US Gold
Confuzion	S	Commodore 64	£6.95	Incentive
Stringer	S	Commodore 64	£6.95	Addictive Games
Super Huey	S	Commodore 64	£9.95	Audiogenic

New Releases

STUNNED

This is the first Imagine game I have seen which I've liked.

Admittedly, I haven't had much to go on, as I can't really get beyond the first screen, but what I've seen so far I enjoy.

It's a bit like *Castle Quest*, I guess, with a little sprite wandering about the screen, trying to avoid hobgoblins, archers and large birds that defecate all over you. (Actually, it sounds a lot like life, too.)

You can pick up various objects en route (at least I think you can – I haven't lived that long.)

The graphics are excellent, and very colourful – although I can't work out why you, "the last in the great line of ARCH MAGES", wear your underpants outside your trousers.

Movement is cursor keys for left and right, A for up/jump and Z for down, and delete for pick up/drop. Not too easy without a lot of practice.

Imagine claim "superb graphics" and "amazing animation" which are both fair enough – but they also say "stunning sound".

It didn't exactly stun me – merely drove me mad as every time you start a new game (in my case, frequently) the Beeb plays a dreadful little ditty which soon becomes unbearable.

An added attraction for potential purchasers is a competition – every month up to August 31, 1985, you can win £100 by sending in the competition entry form with the – wait for it – secret code which can only be got by completing the game.

Wow, that's £500! Cheap way to deter piracy I suppose.

All in all it looks like a goody from Imagine. I was... well... killed a lot.

Program *Wizardore*
Price *£7.95*
Micro *BBC B*
Supplier *Imagine Software (1984) Ltd, 6 Central Street, Manchester M2 5NS*

HUMOUR

English Software had a lot of success with the various versions of *Jetboot Jack* and has adapted the game for that young pretender, the Amstrad 464. The game has been around for such a long time (by software industry standards) that it looks a bit old-fashioned now, but as platform and ladders, dodge and collect games go it is one of the best.

The idea is that *Jetboot Jack* has to move around the record-pressing plant, which has a curious high number of platforms and ladders, to collect notes and dodge bugs and gremlins. The use of jetboots means, you might note, that Mr Jetboot doesn't have to have animated legs – he just skims about.

Anyway you collect notes, duck overhanging rocks and little spider things, work out how to use the various elevators and go on screen after screen, each one with a different screen layout. There are ten screens in all, which is peanuts by today's standards, but there's good humour and quality of design about the game that makes it pretty good. Technically unexciting but you could do worse.

Program *Jetboot Jack*
Price *£8.95*
Micro *Amstrad*
Supplier *English Software, 1 North Parade, Parsonage Gardens, Manchester M60 1BX*

CHECKMATE

What can you say about *Grand Master* that hasn't been said before? How about, it's now available for the C16? Well, it is.

The screen display is large and simple. Perhaps even a bit boring, but then you can't get the sort of graphics Psion dragged out of the QL on the C16, can you?

Movement is by algebraic notation, and the reponse to input is very fast.

There are ten different levels of difficulty, ranging from 1 (the computer responds within five seconds) to 9 (you may have to wait two hours). The tenth level is 0, where response is put as "hours/days". Level 0 is for analysis or postal chess, and presumably not recommended for beginners.

The program seems to be very strong, although it is difficult to tell without weeks of play. Audiogenic claim Grand Master beats all – or at least it beat other Commodore 64 chess programs.

Quite how much of the Commodore 64 quart Audiogenic has managed to fit into the C16 pint pot, is hard to guess.

No doubt there are C16 owners out there who will be delighted with Grand Master. I must admit, though, that it doesn't excite me – but then nor does the C16.

Program *Grand Master*
Price *£8.95*
Micro *C16*
Supplier *Audiogenic, PO Box 88, Reading, Berks*

This Week



Theatre Europe	S	Commodore 64	£9.95	Incentive
Easidata	Ut	Einstein	£20.95	Tatung
Home Budget	Ut	Einstein	£19.95	Tatung
Keydefine	Ut	QL	£9.95	Parenthic
Sketchpad	Ut	QL	£14.95	Sigma Research
Deathstar Interceptor	Arc	Spectrum	£7.95	System 3
Starion	Arc	Spectrum	£7.95	Melbourne House
Battle for Midway	S	Spectrum	£9.95	PSS
Confuzion	S	Spectrum	£6.95	Incentive
The Open	S	Spectrum	£4.95	Watsoft
Letaset	UT	Spectrum	£2.95	Eclipse
Microdrive Fastload	Ut	Spectrum	£4.95	Specialist
Microdrive Mate	Ut	Spectrum	£6.95	Quick Byte

Key: Ad – adventure; Arc – arcade; Ed – education; S – strategy-simulation; Ut – Utility

New Releases

Pick of the week

INFAMY, INFAMY

Legend is the only company I can think of at the moment that manages to be both famous and infamous at the same time I would describe the credibility history of the company roughly like this *Valhalla*, two steps forward. *The Great Space Race* two steps back Now we have *Komplex* and I'm pleased to say it's at least 1½ steps forward again

Komplex is not, in any significant way, an adventure – it looks vaguely like *3D Battlezone* but it's better than that Call it an abstract arcade game that could last for a couple of hours in play

It works like this two thirds of the screen displays a three dimensional view of the decks and levels of an alien world In this world are scattered letters of the title K,O,M,P,L,E,X You must locate each letter and place it in the central control computer

Moving from level to level takes place via a tube which is protected by various devices Other devices on each deck drain power from you

You could say *Komplex* is a 3D collect and dodge type of game but that's to denigrate it The strategy elements of the game are fairly sophisticated and you don't just blast and blast – there is no question of three lives here.

But the most impressive thing for me is the look of the game. The landscape where all this action takes place is genuinely strange and alien. What you see as you move around this world (in excellent hi-res scrolling perspective), are rectangles in the middle of nowhere, curious spindly poles, sudden holes in the ground, dream-like floating geometrical aliens and the fact that it's all in black and white just adds to the faintly mathematical and disturbing effect

Komplex is a truly imagination gripping game, something that cannot be said for many others You'll need to map its world if you're going to stand any chance of locating the letters and finding your way through the service tubes to the CCC It's mostly brains, not brawn, that's required.

Program *Komplex*
Price *£8 95*
Micro *Spectrum*
Supplier *Legend*
PO Box 435
London
E47 LX

IMPROVED

There are any number of compilers available for the Spectrum but few for the Commodore 64 One of the cheapest I have seen is from a one-man-band software house run by J Marshall

The compiler costs £12 and can handle both 8-bit and 16-bit unsigned expressions and includes an Assembler – it can accept assembly language mnemonics freely mixed

The manual is, inevitably perhaps a home made photocopied affair While it's not actually badly-written, it could put you off and I'm positive through long and bitter experience with *Popular* that there will be bugs in some of the typewritten listings.

Like most compilers, there are problems with things like strings such that you can't use them On the other hand, though, the commands for sounds and graphics are considerably improved

Program *MS Basic Compiler*
Price *£12*
Micro *Commodore 64*
Supplier *10 Hawkshead Street*
Southport
Merseyside

PURE BLISS

There are now two ways of buying *Super Huey* the whizzo helicopter simulation epic in which you can just about do everything you could possibly do with a real helicopter Not only that but using a series of data tapes held on a separate tape you can choose different kinds of tasks – exploration rescue, combat

Two ways? You can either pay around £10 for the US Gold version licensed from the states or £8 95 for the Audiogenic licensed version. There is no difference whatsoever between the games – perhaps you will think the US Gold packaging is worth an extra quid or so

Anyway the game features something like 29 separate controls on the instrument flight panel – you won't get into the game easily On the other hand once you do start to master it you get an enormously wide range of different options such that you are unlikely to exhaust the possibilities of the game before your Commodore 64 crumbles into dust

Not for everyone then, but for hardened simulation buffs, pure bliss

Program *Super Huey*
Price *£8 95*
Micro *Commodore 64*
Supplier *Audiogenic*
PO Box 88
Reading
Berks

This Week

Addictive Games 7a Richmond Hill Bournemouth BH2 6HE 0202 296404 **Audiogenic** 39 Sutton Industrial Park London Road Reading Berks 1AZ 0734 664646 **Eclipse**, 79 Ardrossan Gardens Worcester Park Surrey KT4 7AX 01-330 3119 **English** Box 43, Manchester M60 3AD 061 835 1358 **Illusions**, Park Crescent Peterborough PE1 4BG 0733 312120 **Imagine** Imagine Software, 5 Central Street Manchester M2 5NS **Incentive** 54 London Street Reading RG1 4SQ 0734 591678 **Intrigue** Cranbrook Road Tenterden, Kent TN30 6UJ 05806 4726 **James Paten** 2 The Avenue, Fallings Park Wolverhampton 0902 725762 **Kuma** Kuma Computers, 12 Horseshoe Park, Pangbourne RG8 7JW 07357 4335 **Melbourne House**, 39 Milton Trading Estate Abingdon Oxon OX14 4TD 0235 835001 **PSS** 452 Stoney Stanton Road Coventry CV6 5DG 0203 667556 **Paleolithic** 37 Cottesmore Road Hessle North Humberside HU13 9JQ 0482 649187 **Quick Byte** 20 Hastings Road New Southgate London W11 2RJ **Sigma Research**, 231 Caldhams Lane Cambridge CB1 3HV **System 3** 138 Carlton Avenue East Wembly, Middlesex **Telung** Stafford Park 10 Telford Shropshire TF3 3AB 0952 613111 **US Gold** US Gold Unit 10, The Parkway Industrial Centre Heneage Street Birmingham B7 4LY 021 556 3020 **Watsoft** 49 Abbotsview Haddington East Lothian

Junk merchants

Burroughs is today one of the world's biggest computer giants – selling mainframes and mini's.

Beyond a particular 'critical size' a company's international approach seems to be reflected by a corporate attitude to everything – buildings, furniture, dress, hierarchy, relaxation and politics. Raise an issue – anything from Star Wars to the role of women – and there is an official answer. Invariably it is as bland as you can get while still just saying something. People who work for big companies go to Holiday Inns all over the world and find people just like them, who drive General Motors cars and wear Pierre Cardin ties and designer jumpers for the evening.

But the Burroughs Computer Corporation has another side. He is called William Burroughs and he has written books like *The Naked Lunch* and *The Ticket that Exploded*. The creator of the literary cut-up technique and a noted exponent of stream-of-consciousness writing, you may think that Burroughs is as far removed from computers as you can get. You would be wrong because Burroughs knows a lot about *selling* and, in particular, selling in the 'junk' world we live in today.

When computers first arrived in this country there was a massive amount of interest from the public. Computer manufacturers have caught on. The language of mass selling is seen as worthwhile in its own right. Thus Jack Tramiel can talk about "selling personal computers to the masses", and journalists are happy to hang on to his every word without thinking – "Yes, but what are those masses going to *do* with their computers?" In a lot of cases, of course, they will simply gather dust in a cupboard somewhere.

William Burroughs says of such cant. "The junk merchant does not sell his product to the consumer, he sells the consumer to the product. He does not improve and simplify his merchandise. He degrades and simplifies his client."

How many times have you bought an applications program having been told that it would do *x*, *y* and *z*, only to find that it does only *x* minus three and *z* divided by five? Do you then rush back and say "It's not good enough?" And if you do how many times have you been told that everything is still OK because it's a great program for the price?

By the time the buyers have realised their mistake, another development will be on the market and they'll just be gnashing their teeth until they can afford to buy it. Computers are fast becoming a part of our junk culture like soap operas, hamburgers and food processors. All obey three simple laws.

1 Never give anything away for nothing.
2 Never give more than you have to give (always keep the buyers hungry and always make them wait).
3 Always let them know there's more where that came from. The "more" will always be faster, easier to digest, sexier, better, worth waiting for and so on.

Wittangenstein, in his *Tractatus Logico-Philosophicus*, says "If a proposition is not necessary it is meaningless and approaching meaning zero." And Burroughs asks "And what is more unnecessary than junk if you don't need it?" And the answer is "Junkies, if you are not on junk." The sort of 'junk' computers provide is information. People think – mistakenly – that information, of itself, will help them become wiser, more intelligent and better equipped to deal with the dynamics of life.

And so it goes. The build-up prior to the release of a computer – Atari's ST for example – has now reached hysteria point. After its release I predict a swift feeling of disappointment, before the search begins for the next 'amazing' micro just out of reach on the horizon.

Michael Scialom

Split digits

Puzzle No 153

"This is a very interesting number," remarked Professor Hex to some of his students.

98029801

"You'll see if we split this number into two four-digit numbers the number represented by the first four digits (9802) is just one more than that represented by the remaining four (9801). Also the complete eight-digit number is a perfect square!"

"What I would like you to do," commented the Professor, "is to find another eight-digit number that has the same property."

Can you help his students to find what this number could be?

Solution to Puzzle No. 148

The pond will be completely covered on the 10th September.

```
10 LET PAD=1:LET DAY=1
20 LET PAD=PAD+(PAD*3/100)
30 PRINT DAY,PAD
40 IF PAD>2 THEN GOTO 80
50 LET PAD=PAD-(PAD*2/100)
60 LET DAY=DAY+1
70 GOTO 20
80 PRINT "DAYS ELAPSED=";DAY
90 END
```

The program works by assuming that the present area of the lily is equal to 1 unit, and by a repeated increase of 3% and decrease of 2%, counts the number of days which elapse until the area doubles to over 2 units.

This gives a result of 72 days, so, counting the first of July as day 1, we arrive at an answer of September 10th.

Winner of Puzzle 148

The winner is E C Oats of Douglas, Isle of Man, who receives £10

Rules:

The closing date for Puzzle No 152 is May 8

The Hackers

My speech input system will ONLY respond to MY voice!

Wow! So you would only have to SAY 'Purge all files'?

Exactly! You've got it in one! And...



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